OWNER
GREEN OAKS DQ, LLC
CONTACT: MARTIN SCHELLING
260 MIRON DRIVE
SOUTHLAKE, TX 76092
817.552.7786
MARTIN@CONIFERRE.COM

DEVELOPER
CHICKEN TIME REAL ESTATE, LLC
CONTACT: JOHN MURPHY
900 PARKER SQUARE,SUITE 250
FLOWER MOUND, TEXAS 75028
972.849.1636
MURPHY@HENRYINVESTMENTGROUP.COM

ENGINEER
CLAYMOORE ENGINEERING, INC
CONTACT: MATT MOORE
1903 CENTRAL DR., SUITE #406
BEDFORD, TX 76021
817.281.0572
MATT@CLAYMOOREENG.COM

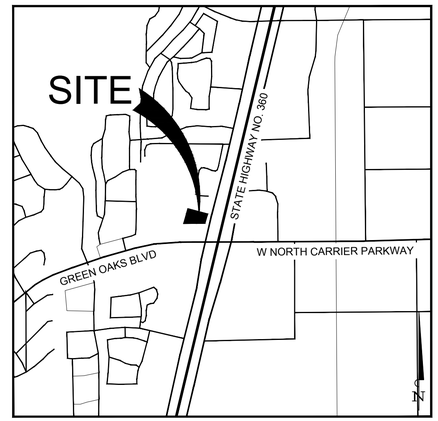
ARCHITECT
DUANE MEYERS
CONTACT: DUANE MEYERS
506 PR 2422
UNCERTAIN, TX 75661
903.484.4040
DRMEYERS@MAC.COM

Grand Prairie
TEXAS

CIVIL PLANS FOR

EL POLLO LOCO - GREEN OAKS ADDITION

ADDRESS:



Vicinity Map
SCALE: NTS

Released for Construction: _____ DATE: _____
City Engineer

Recommended for Release: _____ DATE: _____
Director of Public Works

Recommended for Release: _____ DATE: _____
Transportation

Recommended for Release: _____ DATE: _____
Right-of-Way Agent

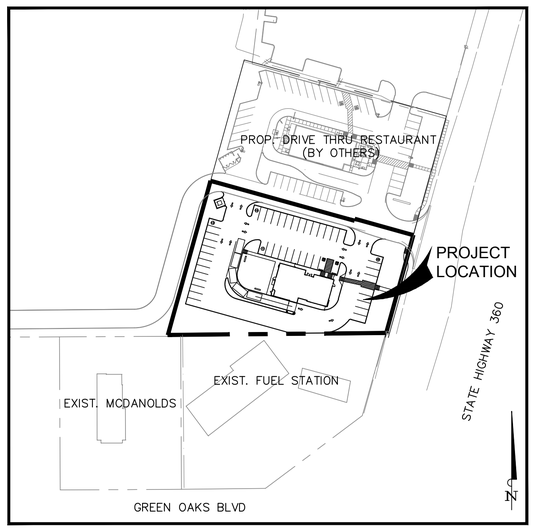
Recommended for Release: _____ DATE: _____
Drainage Engineer

Recommended for Release: _____ DATE: _____
Development Coordinator

The Developer Agrees that all dedications & infrastructure costs allocated & paid by the Developer for this project is proportionate to the proposed development costs.

Developer _____ Title _____ Date _____

NOTES:
1. Release of these plans for construction shall expire 36 months after the original date of release. (UDC ART. XII.12.12.4)
2. The release of these plans for construction is based on general compliance and does not approve or warrant the design and does not relieve the owner/developer from any items discovered during construction which are deemed necessary to comply with Federal, State or City ordinances and standards. The current City Standard Details shall be used at the time of release of the Public Works construction permit to ensure continuity of construction of public improvements.



Site Map
SCALE: 1:100

STATE OF TEXAS
MATT MOORE
95813
LICENSED
PROFESSIONAL ENGINEER
04/21/2016

Consulting Firm Tx. Reg. #14199

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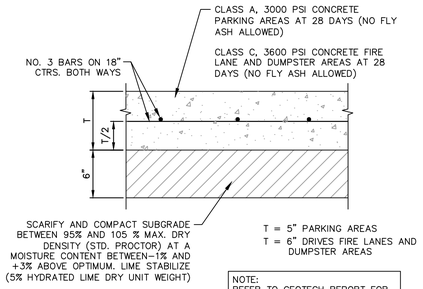
X2016-05

CITY FILE NO. X2016-05

EL POLLO LOCO-GREEN OAKS ADDITION

FILE NAME AND PATH:



NOTE:
REFER TO GEOTECH REPORT FOR FURTHER INFORMATION BY TERRACON ENGINEERING DATED 2/19/2016 FOR ADDITIONAL INFO

CONCRETE PAVEMENT SECTION

N.T.S.

SITE DATA SUMMARY					
ITEM	STANDARD	REQUIRED	PROVIDED	MEETS	NOTES
BUILDING AREA	UDC		3,000 Sq. Ft.	YES	
BUILDING HT.	UDC	25' MAX	25'	YES	
ZONING	UDC	GR-1	GR-1	YES	
PROPOSED USE	UDC	GR-1	DRIVE THROUGH RESTAURANT	YES	
FLOOR AREA RATIO	UDC	0.35:1 MAX	0.06	YES	
LOT AREA	UDC	5,000 MIN	47,622	YES	
LOT WIDTH	UDC	50'	134'	YES	
LOT DEPTH	UDC	100'	288'	YES	
FRONT SETBACK	SH-360 OVERLAY	30'	30'	YES	
REAR SETBACK	UDC	0'	0'	YES	
SIDE SETBACK	UDC	0'	0'	YES	
MIN. LANDSCAPING	UDC	10%	25%	YES	
IMPERVIOUS COVER	UDC		75%		
PARKING	UDC	30 (1 SP/100 SF)	47	YES	
HC PARKING	ADA/TAS	2	2	YES	

IMPACT ZONE: NORTH (TARRANT)

FLOODPLAIN NOTE

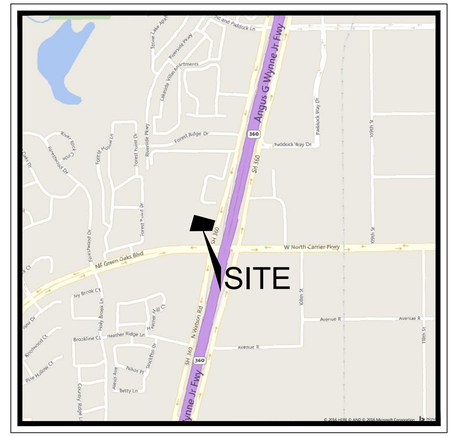
ACCORDING TO MAP NO. 48439C0245K, DATED SEPTEMBER 25, 2009 OF THE NATIONAL FLOOD INSURANCE PROGRAM MAP, FLOOD INSURANCE RATE MAP OF TARRANT COUNTY, TEXAS, FEDERAL EMERGENCY MANAGEMENT AGENCY, FEDERAL INSURANCE ADMINISTRATION, THIS PROPERTY IS WITHIN ZONE "X" (UNSHADED) AND IS NOT WITHIN A SPECIAL FLOOD HAZARD AREA.

N

GRAPHIC SCALE

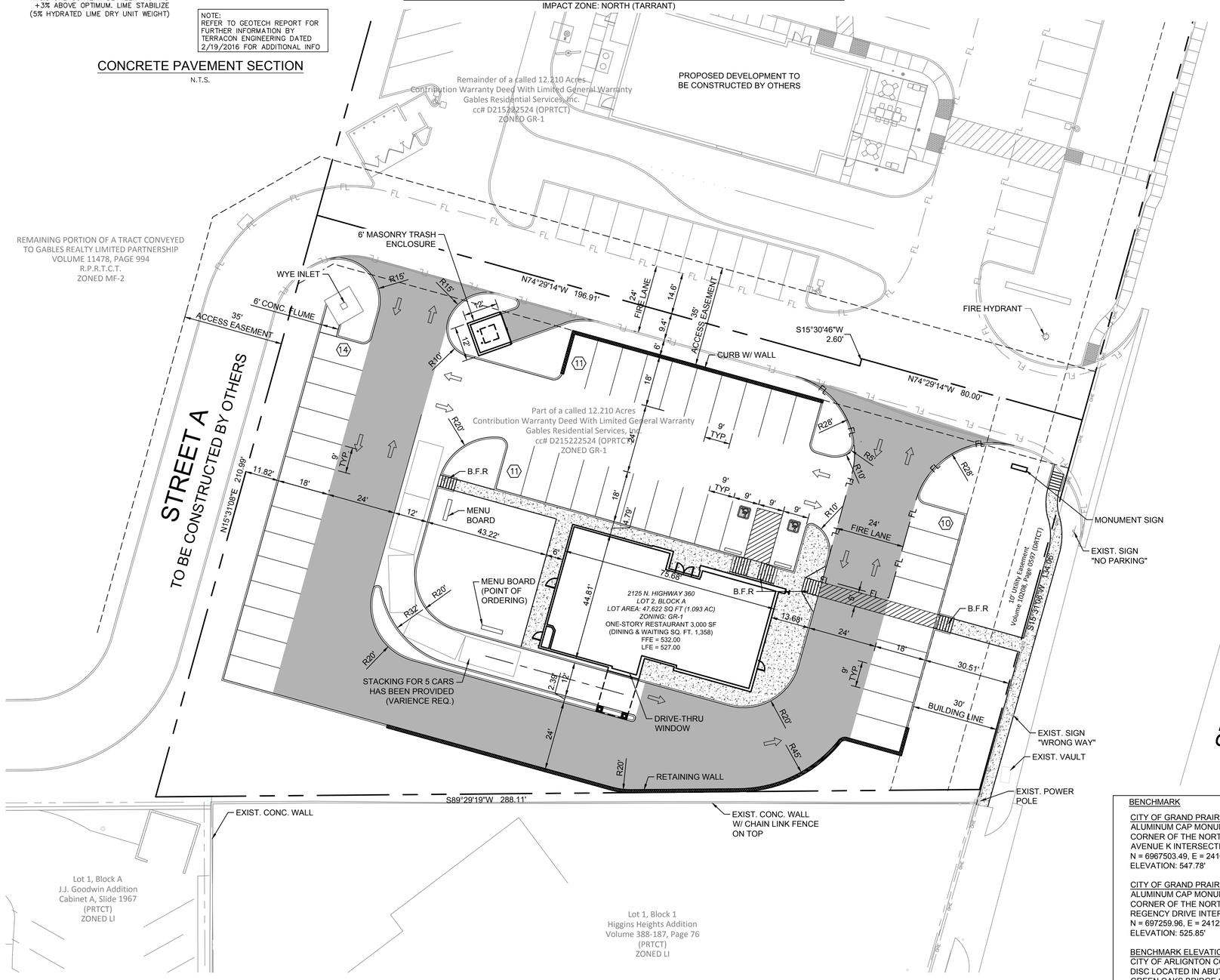
20 0 10 20 40

1 inch = 20 ft.



VICINITY MAP

N.T.S.



LEGEND	
	PROPOSED LIGHT DUTY PAVEMENT
	PROPOSED HEAVY DUTY PAVEMENT
	PROPOSED SIDEWALK
	PROPOSED CONCRETE CURB AND GUTTER
6	PARKING COUNT
B.F.R.	BARRIER FREE RAMP
FL	PROPOSED FIRE LANE

BENCHMARK

CITY OF GRAND PRAIRIE GPS MONUMENT #6
ALUMINUM CAP MONUMENT STAMPED G.P.S. 6 AT THE NORTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND AVENUE K INTERSECTION
N = 6967503.49, E = 2410580.75 (GRID)
ELEVATION: 547.78'

CITY OF GRAND PRAIRIE GPS MONUMENT #47
ALUMINUM CAP MONUMENT STAMPED G.P.S. 47 AT THE SOUTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND REGENCY DRIVE INTERSECTION
N = 697259.96, E = 2412239.43 (GRID)
ELEVATION: 525.85'

BENCHMARK ELEVATION 543.31'
CITY OF ARLIGNTON CONTROL MONUMENT NO. AROI-ALUMINUM DISC LOCATED IN ABUTMENT AT THE NORTHWEST CORNER OF THE GREEN OAKS BRIDGE OVER HIGHWAY NO. 360

CITY CASE #: SU160301/S160303

SPECIFIC USE PERMIT/SITE PLAN

LEGAL DESCRIPTION:
1.093 ACRES
JONATHAN BROWN SURVEY, ABSTRACT NO. 110, CITY OF GRAND PRAIRIE, TARRANT COUNTY, TEXAS

CITY OF GRAND PRAIRIE

OWNER:
GREEN OAKS DQ, LLC
260 MIRON DRIVE
SOUTHLAKE, TX 76092

APPLICANT:
CLAYMOORE ENGINEERING, INC.
1903 CENTRAL DR., SUITE #406
BEDFORD, TX 76021
PH: 817.281.0572

SURVEYOR:
AJ BEDFORD GROUP, INC.
301 N ALAMO RD
ROCKWALL, TX 75087
PH: 972.722.0225

COUNTY:	CITY:	STATE:
TARRANT COUNTY	CITY OF GRAND PRAIRIE	TEXAS

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOORE.COM

STATE OF TEXAS
MATT MOORE
95813
LICENSED
PROFESSIONAL ENGINEER
04/18/2016

EL POLLO LOCO
2125 N. HIGHWAY 360
GRAND PRAIRIE, TEXAS 75050

No.	DATE	REVISION	BY

SPECIFIC USE PERMIT/SITE PLAN

DESIGN:	CLC
DRAWN:	CLC
CHECKED:	MAM
DATE:	4/18/2016

SHEET
SP-1

File No. 2015-145

PLOTTED BY: JVALDEZ
PLOT DATE: 4/21/2016 11:56 AM
LOCATION: C:\EGNYTE\SHARED\PROJECTS\2015-145 EL POLLO GRAND PRAIRIE\CADD\SHEETS\SP-1 SITE PLAN.DWG
LAST SAVED: 4/18/2016 1:54 PM

CITY OF GRAND PRAIRIE
FY2016 GENERAL NOTES
FOR PRIVATE DEVELOPMENT
(Revision October 2015)

1. All work shall be done in accordance with the current City of Grand Prairie standards and specifications and the North Central Texas Council of Governments (NCTCOG) "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" along with all of the latest amendments. Copies may be obtained from the "NORTH CENTRAL COUNCIL OF GOVERNMENTS", PO Drawer 5888, Arlington, Texas, 76005-5888, Phone (817) 640-3300; also available at www.publicworks.dfwinfo.com A copy of the contract documents, plans and specifications shall be available on-site at all times by the Contractor.

2. All communication between the City and the Contractor shall be through the City Inspector and Engineer of Record only. It is the responsibility of the contractor to contact the appropriate department for inspections of work not falling under the Public Works Construction Permit.

3. The location and depth of all utilities shown on the plans are approximate and there may be other unknown existing utilities not shown on the plans. All existing utilities shall be field verified and protected by the Contractor prior to the start of construction. Also see General Note No. 4(D). The contractor shall contact the following utility companies 72 hours prior to doing any work in the area:

(a) Atmos Gas Line Location PH (817) 303-2914
(b) ONCOR Electric Delivery PH (972) 923-4245
(c) AT&T Telephone Co. Line Location PH (972) 660-0422
(d) Time Warner Cable Company Line Location PH (214) 320-7396
(e) City Utility Mains Line Location PH (972) 237-8413
(f) City Utility Mains City Inspector PH (972) 237-8141
(g) City Transportation Services PH (972) 237-8139
(h) City Fire Administration PH (972) 237-8302
(i) Verizon PH (800) 624-9675
(j) U.S. Sprint PH (800) 521-0579
(k) AT&T PH (800) 252-1133
(l) Trinity River Authority PH (972) 262-5186
(m) Texas Department of Transportation (Dallas Area) PH (972) 291-4043
Texas Department of Transportation (Tarrant Area) PH (817) 370-6500
(n) City Fiber Optics and Traffic Signals–City Streets Division PH (972) 237-8525
(o) Dig TESS PH (800) 344-8377

4. It shall be the responsibility of the Contractor to perform the following:
(a) Prevent any property damage to property owner's poles, fences, shrubs, mailboxes, etc.
(b) Locate, verify working condition and protect all existing sprinkler systems lines and heads (if any) within areas disturbed by construction activities. Remove, adjust and reinstall in good condition equal to or better than existing condition; replace, if in direct conflict, with the same or better quality material and appurtenances, all at the Contractor's own expense.
(c) Provide access to all drives during construction.
(d) Protect all underground and overhead utilities and repair any damages. Also see General Note No. 3.
(e) Notify all Utility Companies and verify location of all utilities prior to the start of construction.
(f) Provide construction staking of public improvements constructed within any City easement or right-of-way. Staking shall be performed by a surveyor licensed in the State of Texas.
(g) Cooperate with the Utility Companies where utilities are required or specified to be relocated.
(h) Work in close proximity to and protect existing Utility Mains, traffic lights and poles.
(i) Any item not specifically called out to be removed shall be brought to the attention of the Engineer of Record prior to removing that item or it shall be replaced at the Contractor's own expense.
(j) Any tree, shrub, or grassed areas damaged by the Contractor's work shall be replaced at the Contractor's expense to existing or better condition.

5. In the preparation of the plans and specifications, the Engineer of Record has endeavored to indicate the location of existing underground utilities. It is not guaranteed that all lines or structures have been shown on the plans. The contractor shall request for line locates as directed in item #3. The Engineer of Record shall be notified about any conflicts to provide written direction and revised plans as required.

6. Verification of the condition of existing City utilities prior to connections shall be the responsibility of the contractor. The contractor shall request for line locates as directed in item #3.

7. The location for the disposal of construction material shall be approved by the City of Grand Prairie Engineering Division prior to the start of construction.

8. All phases of construction must be coordinated with the Engineer of Record. Also, the Contractor is required to coordinate with the adjacent property owners and the City in order to minimize conflicts in traffic flow or other operations.

9. Field adjustments may be necessary and shall be carried out as directed in written form, and revised plans as needed, by the Engineer of Record. The adjustments shall be coordinated with the contractor and the City Engineering Inspector.

10. The Contractor shall verify, locate, and protect existing water, wastewater, fiber optic cable/pathways (City and franchise utility), traffic signals and appurtenances, storm drainage, gas, electric and telephone mains and services and restore service in case of any damage.

11. The Contractor shall contact the City of Grand Prairie Transportation Services Department prior to any sign or street markings removal. Please See General Note No. 4. Sign removal and reinstallation/relocation shall be in good condition equal to or better than existing condition, and conform to the Engineer of Record's specifications.

12. All fences, signs, survey monuments, and property corner monuments removed or damaged during construction shall be replaced with new material in conformance with the City Engineer's specifications. Costs for replacement of City GPS monuments damaged or removed during construction shall be at the contractors' expense.

13. The Contractor shall relocate existing mailboxes in conflict with the proposed improvements and as specified on the plans, in good condition equal to or better than existing condition, complete in place. The mailboxes shall be accessible at all times for mail delivery.

14. The Contractor shall be responsible for taking all precautions to protect existing trees outside the scope of this Project or those trees not designated in the plans to be removed.

15. The Contractor shall be responsible for repairing any damage caused by the Contractor outside of the designated work area with new quality material at the Contractor's expense.

16. The Contractor shall locate, verify working condition and protect all existing sprinkler systems lines and heads (if any), and shall: remove, adjust and reinstall these facilities in good condition equal to or better than existing condition; replace, if in direct conflict, with the same or better quality material and appurtenances.

17. The Contractor shall submit batch designs for concrete and grout for review by the City prior to any placement for any publicly dedicated infrastructure.

18. All existing grades shown on the plans are approximate and are based on the best information available. Grades shall be verified and any discrepancy brought to the attention of the Engineer of Record for evaluation and adjustments as needed.

19. All backfill for ditch lines are to be mechanically tamped to 95% STD Proctor density (ASTM D698), at a moisture content near optimum (-2% to +2%, or as specified by the Engineer of Record). Backfill and materials testing shall be performed by the City selected materials testing firm. Costs of services shall be paid by the developer prior to start of construction.

20. Contractor to fill all voids under existing pavement when installing new line. Also all ditch lines must be filled at the end of each day's work.

21. All pipes shall be kept free of trash and dirt at all time. At the end of each day, the pipe shall be temporarily sealed/connected. All pipe installation shall be performed as recommended per the pipe manufacturer. The contractor shall inspect the site daily and keep the site free of trash and construction debris.

22. The Contractor shall keep the existing fire hydrant(s) in service at all times.

23. The Contractor shall maintain the existing water mains in service during all phases of construction. Leaks caused by the Contractor shall be repaired immediately at the Contractor's expense. Leaks along the existing water main close to the working area, caused by vibration, etc. (during working hours) shall be repaired by the Contractor with the City only providing the required parts. The City will repair all leaks if the Contractor is not on the job-site (primarily after working hours); if the leak is directly caused by the Contractor and not repaired, all charges incurred shall be billed to the Contractor.

24. All cutting and plugging of the existing water main, where specified on the plans, shall include all labor, fittings and appurtenances required to perform this work.

25. The contractor shall contact the assigned inspector for the operation of all water valves & scheduling of services by Water/Wastewater.

26. The contractor shall maintain the existing water mains and services in operation when installing new water mains. This shall include any temporary connections, if required.

27. The contractor must notify each property owner a minimum of 24 hours prior to shutting off water for connection to new main. The contractor shall notify the City Engineering Inspector a minimum of 72 hours in advance for all water or wastewater locates or shut offs of water. The length of time for water shut-downs shall be limited to as needed to perform the required work.

28. The contractor shall maintain the existing wastewater mains and services in operation when installing new wastewater mains. This shall include any temporary connections, if required.

29. The Engineer of Record shall specify the use of pre-cast or cast-in-place wastewater manholes on the plans. It shall be the contractor's responsibility to verify the condition of existing wastewater manholes at tie in locations. Alternative construction for wastewater manholes shall be evaluated on a case-by-case basis by Public Works and Engineering Department.

30. The maximum deflection of pipe joints shall not exceed that recommended by the pipe manufacture. If it is necessary to deflect the pipe (greater that the recommended amount) the Contractor shall provide fittings as needed.

31. Prior to the start of construction, the City Engineering Inspector, City Water/Wastewater representative and the contractor shall make a dry run to the system to insure, to the extent possible, that the utility can be found and secured. Any issues shall be brought to the attention of the Engineer of Record to provide written direction and provide revised plans as needed. SCADA systems required for the project shall be installed at the owner/contractors expense and shall comply with the requirements of the City of Grand Prairie Utility Services Division.

32. Traffic Control Plans shall be submitted to the City of Grand Prairie Transportation Services Department. The Traffic Control Plan and barricades shall maintain traffic flow and shall be in accordance with the latest edition of the TMUTCD and prepared by a Work Zone Certified Technician. Traffic Control Plans shall be submitted a minimum of two weeks in advance of work commencing. Lane closures shall only be allowed between the hours of 9:30am to 3:30pm unless approved by Transportation Services. Temporary Street closure requests shall be submitted in writing. If approved, notifications to Police, Fire, Mail, Garbage and Schools shall be made by Transportation Services. There are no guarantees that street closings will be approved by the City.

33. All pavement markings, including raised pavement markers, lane striping, transverse markings, signs and other traffic control devices, disturbed during construction shall be maintained, repaired or replaced at the contractor's expense.

34. The contractor shall maintain the flow of traffic at all times and provide access to all drives. Requests for over-night/temporary plating of open cuts in the City right-of-way shall be made in writing forty-eight (48) hours prior to the removal of the paved surface and shall be evaluated on a case-by-case basis and approved by the Director of Transportation or his representative.

35. All detention/retention basins shall be sodded with grass, landscaped, and irrigated in accordance with City standards. All such basins shall have a drainage and detention easement dedicated to the City, incorporating the basin and the outfall system(s) that conveys storm flows to the public storm drain system. The owner/developer (heirs and assigns) shall be bound with operations and maintenance of all such basins per Article 14, Section 14.6.3 and the agreement shall be recorded with the county.

36. Seed/sod shall be furnished to establish ground cover over all disturbed areas as an erosion control measure. The Contractor shall not wait until the completion of the entire project before doing this work. The project shall not be considered for acceptance by the City unless the establishment of 80% ground cover is ensured.

37. Sheeting, shoring, and bracing: The contractor will abide by all applicable federal, state, and local laws governing excavation. Trench's side slopes shall meet Occupational Safety and Health Administration (OSHA) standards that are in effect at the time of construction. Sheeting shoring and bracing shall be required if side slope standards are not met. A pull box, meeting OSHA standards, will be acceptable. The Contractor shall submit site specific, detailed plans and specifications for trench safety systems that meet OSHA standards that are in effect at the time of development of project when trench excavation will exceed a depth of five (5) feet. These plans will be sealed by an Engineer registered by the State of Texas and submitted to The City of Grand Prairie prior to obtaining release of the public works construction permit.

38. The Developer/Owner and Contractor are required by the Texas Commission on Environmental Quality (TCEQ), Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (TXR150000), and the current City of Grand Prairie Stormwater Regulations to develop and prepare a site specific Stormwater Pollution Prevention Plan (SWP3) pursuant to Chapter 26 Section 26.040 of the Texas Water Code and Section 402 of the Clean Water Act. A Fully executed SWP3 will be submitted for review and acceptance by the City's Stormwater Department. Land disturbing activities that equal one (1) acre and less than five (5) acres are required by the TPDES Construction General Permit and the City of Grand Prairie to submit a SWP3 and a signed Small Construction Site Notice to the City's Stormwater Department. Land disturbing activities that equal five (5) acres or more, or included in a larger project or common plan of development that equals five (5) or more acres are required by the TPDES Construction General Permit and the City of Grand Prairie to submit a SWP3, Notice of Intent (NOI) and Construction Site Notice provided by the Primary Operator by definition in the TPDES Construction General Permit as having Day to Day operational control over the site. If there is a Primary Operator having control over construction plans or specifications, such operator shall also need to submit a NOI and Site Notice as defined in the TPDES Construction General Permit to the City. If a Secondary Operator is part of this plan, and meets the definition guidelines in accordance with the TPDES Construction General Permit, then they can or should fall under the Primary Operators NOI and will sign the Secondary Operator Construction Site Notice and submit to the City. The Construction Site Notice must be posted at the construction site in clear view of the public at all times during the life of the construction. Once construction activities have ceased and stabilization thresholds have been satisfied (100% coverage and 70% density), the Developer/Owner and Contractor must prepare and submit a Notice of Termination (NOT) to the TCEQ and a copy must be submitted to the City's Stormwater Department for each land disturbing activities that disturb 5 or more acres. For projects disturbing 1 or more acres but less than 5 acres, the signed Small Construction Site Notice must be submitted for removal of oversite to the City's Stormwater Department.

39. All erosion control devices shown on the plans released for construction shall be installed in accordance with the SWP3 sequencing prior to commencing any earth disturbing activities. Failure to install the erosion control devices before starting the earth disturbing activities may result in sanctions including, but not limited to, withholding of release of construction permits, inspections, payment of City funded portions of the project, suspension of construction activities, or citations. Erosion control devices shall be installed and maintained in compliance with the project plans, City stormwater ordinance and/or SWP3 and Construction General Permit.

40. The contractor shall comply with the SWP3 as specified, including installing, maintaining, and removing temporary control measures, conducting and documenting weekly inspections of control measures, watering for dust control, maintaining spill response equipment on-site, and other "good housekeeping" practices. Minimum control measures include silt fences (or erosion control mats), stabilized construction entrance, and establishing vegetation. Hay products are not acceptable as BMP's with the City of Grand Prairie. The SWP3 must be readily available for review by the Stormwater Department or a designated representative.

41. It shall be unlawful for any person to lay, construct, build, grade, gravel, pave, surface, excavate, resurface, or do any work in or upon any public street, alley, easement, thoroughfare or public place within the City, without first having obtained a permit to do such work from the Director of Public Works, and without having paid a permit fee to the City, and having made and executed a bond to the City in the sum of one-hundred (100) percent of the total contract price as directed in Article 12 of the Unified Development Code. All Sub-sections of the permit shall be complete and submitted to the City for release of the permit. The permit shall be for the specific work contemplated. The permittee shall notify the City Engineer of the construction startup date and an expected completion date.

42. These General Notes shall be included within the design documents and shall be sealed and signed by the Engineer of Record; therefore, certifying that these notes have not be altered as received from the City of Grand Prairie.

R:\Forms\For FY2016\Master Forms\General Notes Private Development- FY2016.doc

PLOTTED BY: JVALDEZ
PLOT DATE: 4/21/2016 11:45 AM
LOCATION: C:\EGNYTE\SHARED\PROJECTS\2015-145 EL POLLO GRAND PRAIRIE\CADD\SHEETS\C-1 GENERAL NOTES.DWG
LAST SAVED: 3/24/2016 4:25 PM

TEXAS REGISTRATION #14199
CLAY MOORE ENGINEERING
1901 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOOREENG.COM

STATE OF TEXAS
MATT MOORE
95813
LICENSED
PROFESSIONAL ENGINEER
04/18/2016

EL POLLO LOCO
2125 N. HIGHWAY 360
GRAND PRAIRIE, TEXAS 75050

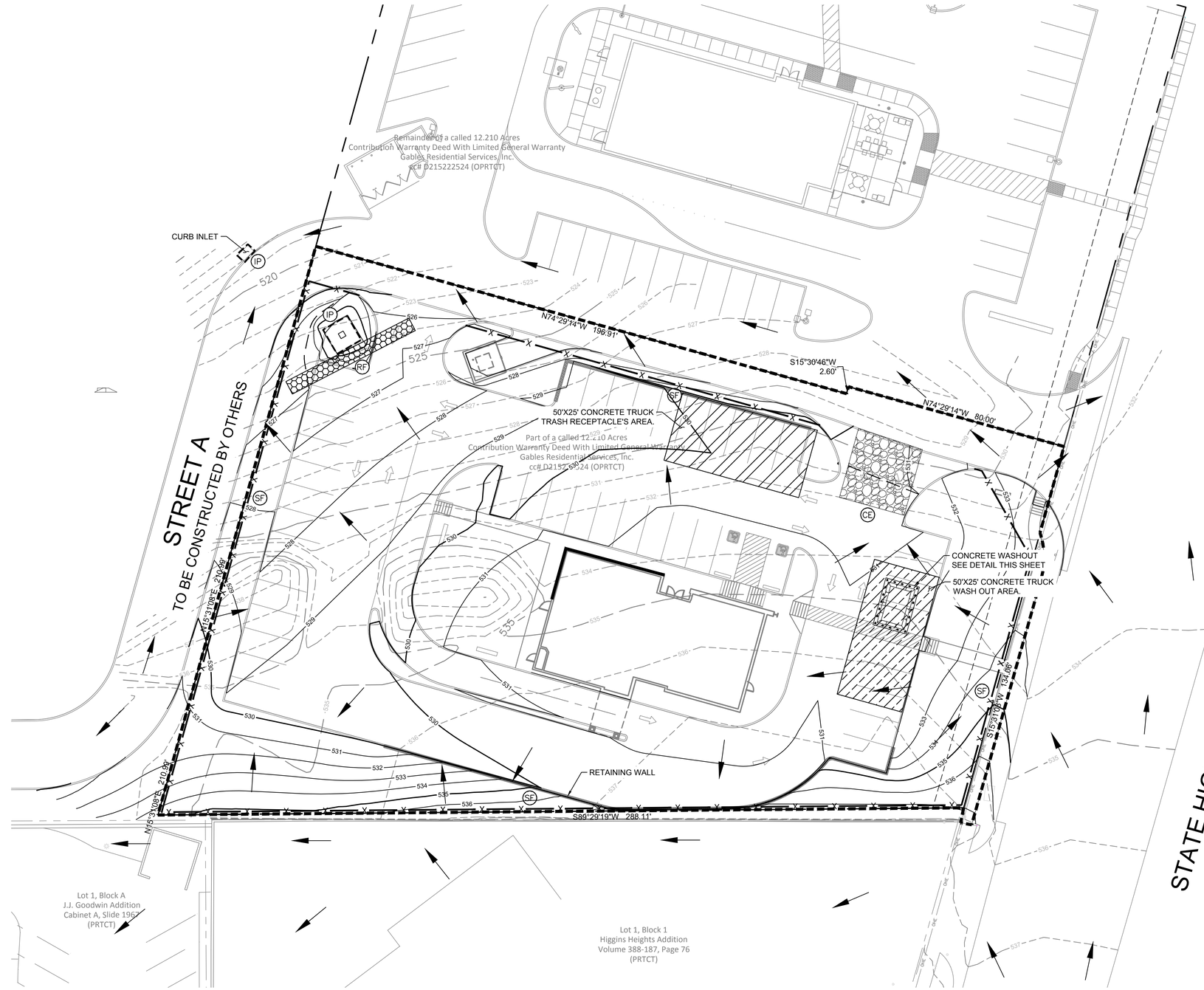
No.	DATE	REVISION	BY

GENERAL NOTES

DESIGN: CLC
DRAWN: CLC
CHECKED: MAM
DATE: 4/18/2016

SHEET
C-1

File No. 2015-145



GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

ACREAGE SUMMARY	
ON-SITE DISTURBED AREA	1.09 AC
OFF-SITE DISTURBED AREA	0.01 AC
TOTAL DISTURBED AREA	1.10 AC

LEGEND	
	DIRECTION OF FLOW
	EXISTING CONTOUR
	PROPOSED CONTOUR
	LIMITS OF CONSTRUCTION
SF	SILT FENCE
CE	CONSTRUCTION ENTRANCE
FS	FILTER SOCK
IP	INLET PROTECTION
RF	ROCK FILTER DAM TYPE - 1
	CONCRETE TRUCK WASHOUT AREA
	TRASH RECEPTACLE'S AREA

NOTES:
1. CONTRACTOR SHALL PREVENT MUD AND SEDIMENT FROM LEAVING THE CONSTRUCTION SITE AT TALL TIMES.
2. ALL EROSION CONTROL DEVICES SHALL BE CONSTRUCTED AND MAINTAINED IN COMPLIANCE WITH CITY STANDARD EROSION CONTROL DETAILS, SHEETS C-10 AND C-11 ATTACHED.
3. CONTRACTOR SHALL POLICE SITE DAILY AND KEEP SITE FREE OF TRASH AND CONSTRUCTION DEBRIS.
4. ALL DISTURBED AREAS SHALL BE STABILIZED IN ACCORDANCE WITH THE LANDSCAPE PLAN. ANY AREAS DISTURBED OUTSIDE OF THE LANDSCAPE PLAN LIMITS SHALL BE HYDRO MULCHED WITH BERMUDA SEED AND FERTILIZER AND WATERED REGULARLY UNTIL A HEAVY STAND OF GRASS IS ESTABLISHED OVER AT LEAST 80% OF THE DISTURBED AREA WITH NO BALD SPOTS. SOLID SOD WOULD BE AN ACCEPTABLE ALTERNATIVE TO HYDRO MULCH

EROSION CONTROL SCHEDULE AND PHASING

THE PROJECT SHALL GENERALLY CONFORM TO THE FOLLOWING:

PHASE 1 – DEMOLITION/GRADING
- A. CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE, SILT FENCE, ROCK FILTER DAM, AND TREE PROTECTION FENCE ACCORDING TO THE APPROXIMATE LOCATION SHOWN ON GRADING AND EROSION CONTROL PLAN, NOTES, AND DETAIL SHEETS.
- B. BEGIN CLEARING AND GRADING OF SITE.
- C. SEED AND REVEGETATE SLOPES WHERE SHOWN.

PHASE 2 – UTILITIES
- A. KEEP ALL STORM WATER POLLUTION PREVENTION MEASURES IN PLACE.
- B. INSTALL STORM DRAINS AS SPECIFIED ON PLAN SHEETS.
- C. INSTALL INLET PROTECTION.

PHASE 3 – PAVING
- A. KEEP ALL STORM WATER POLLUTION PREVENTION MEASURES IN PLACE. REMOVE AS NEEDED TO PAVE.
- B. STABILIZE SUBGRADE.
- C. PAVE PARKING LOT AND SIDEWALKS AS SPECIFIED ON PLAN SHEETS.
- D. REMOVE TEMPORARY CONSTRUCTION ENTRANCE.
- E. MAINTAIN INLET PROTECTION.

PHASE 4 – LANDSCAPING AND SOIL STABILIZATION
- A. REVEGETATE LOT AND PARKWAYS
- B. LANDSCAPE CONTRACTOR SHALL REVEGETATE ALL AREAS RESERVED FOR LANDSCAPE VEGETATIVE COVERS.
- C. REMOVE EROSION CONTROL DEVICES WHEN GROUND COVER ESTABLISHED.

B.M.P. MAINTENANCE SCHEDULE

TEMPORARY STONE CONSTRUCTION ENTRANCE/EXIT:

INSPECTIONS SHALL BE MADE WEEKLY AND AFTER RAIN STORM EVENTS TO ENSURE THAT THE FACILITY IS FUNCTIONING PROPERLY. AGGREGATE PAD SHALL BE WASHED DOWN OR REPLACED WHEN SEDIMENT OR MUD HAS CLOGGED THE VOID SPACES BETWEEN THE SONES OR MUD IS BEING TRACKED ONTO THE PUBLIC ROADWAY. RUNOFF FROM WASH DOWN OPERATION SHALL BE FILTERED THROUGH ANOTHER B.M.P. PRIOR TO DRAINING OFF–SITE.

SILT FENCE:

INSPECTIONS SHALL BE MADE WEEKLY AND AFTER RAIN STORM EVENTS. SEDIMENT SHALL BE REMOVED FROM BEHIND THE FENCE WHEN THE DEPTH OF SEDIMENT HAS BUILT UP TO ONE–THIRD THE HEIGHT OF THE FENCE ABOVE GRADE. FENCE SHALL BE INSPECTED FOR GAPS AT BASE. INSPECT SUPPORTING POSTS AND FILTER FABRIC. REPLACE IF REQUIRED.

INLET PROTECTION:

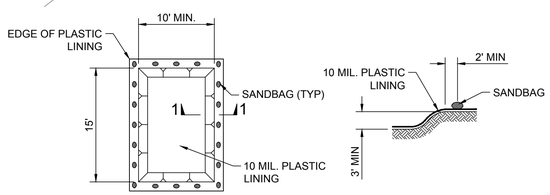
INSPECTIONS SHALL BE MADE WEEKLY AND AFTER RAIN STORM EVENTS TO ENSURE THAT THE DEVICE IS FUNCTIONING PROPERLY. SEDIMENT SHALL BE REMOVED FROM THE STORAGE AREA WHEN SEDIMENT DEPTH HAS BUILT UP TO ONE–HALF THE DESIGN DEPTH. IF DE–WATERING OF THE STORAGE VOLUME IS NOT OCCURRING, CLEAN OR REPLACE THE FILTER STONE SURROUNDING THE INLET. CLEAN THE STONE SURFACE THE FIRST FEW TIMES BY RAKING. REPEATED SEDIMENT BUILD–UP WILL REQUIRE FILTER STONE REPLACEMENT.

BENCHMARK

CITY OF GRAND PRAIRIE GPS MONUMENT #6
ALUMINUM CAP MONUMENT STAMPED G.P.S. 6 AT THE NORTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND AVENUE K INTERSECTION

CITY OF GRAND PRAIRIE GPS MONUMENT #47
ALUMINUM CAP MONUMENT STAMPED G.P.S. 47 AT THE SOUTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND REGENCY DRIVE INTERSECTION

BENCHMARK ELEVATION 543.31'
CITY OF ARLIGNTON CONTROL MONUMENT NO. AROI-ALUMINUM DISC LOCATED IN ABUTMENT AT THE NORTHWEST CORNER OF THE GREEN OAKS BRIDGE OVER HIGHWAY NO. 360



CONC. WASHOUT - PLAN
NTS

SECTION 1-1
NTS

TEXAS REGISTRATION #14199
CLAY MOORE ENGINEERING
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STATE OF TEXAS
MATT MOORE
95813
LICENSED
PROFESSIONAL ENGINEER
04/18/2016

EL POLLO LOCO
2125 N. HIGHWAY 360
GRAND PRAIRIE, TEXAS 75050

No.	DATE	REVISION	BY

EROSION CONTROL PLAN

DESIGN:	CLC
DRAWN:	CLC
CHECKED:	MAM
DATE:	4/18/2016

SHEET
C-2

File No. 2015-145

PLOTTED BY: JVALDEZ
PLOT DATE: 4/21/2016 11:46 AM
LOCATION: C:\EGNYTE\SHARED\PROJECTS\2015-145 EL POLLO GRAND PRAIRIE\CADD\SHEETS\C-2 EROSION CONTROL PLAN.DWG
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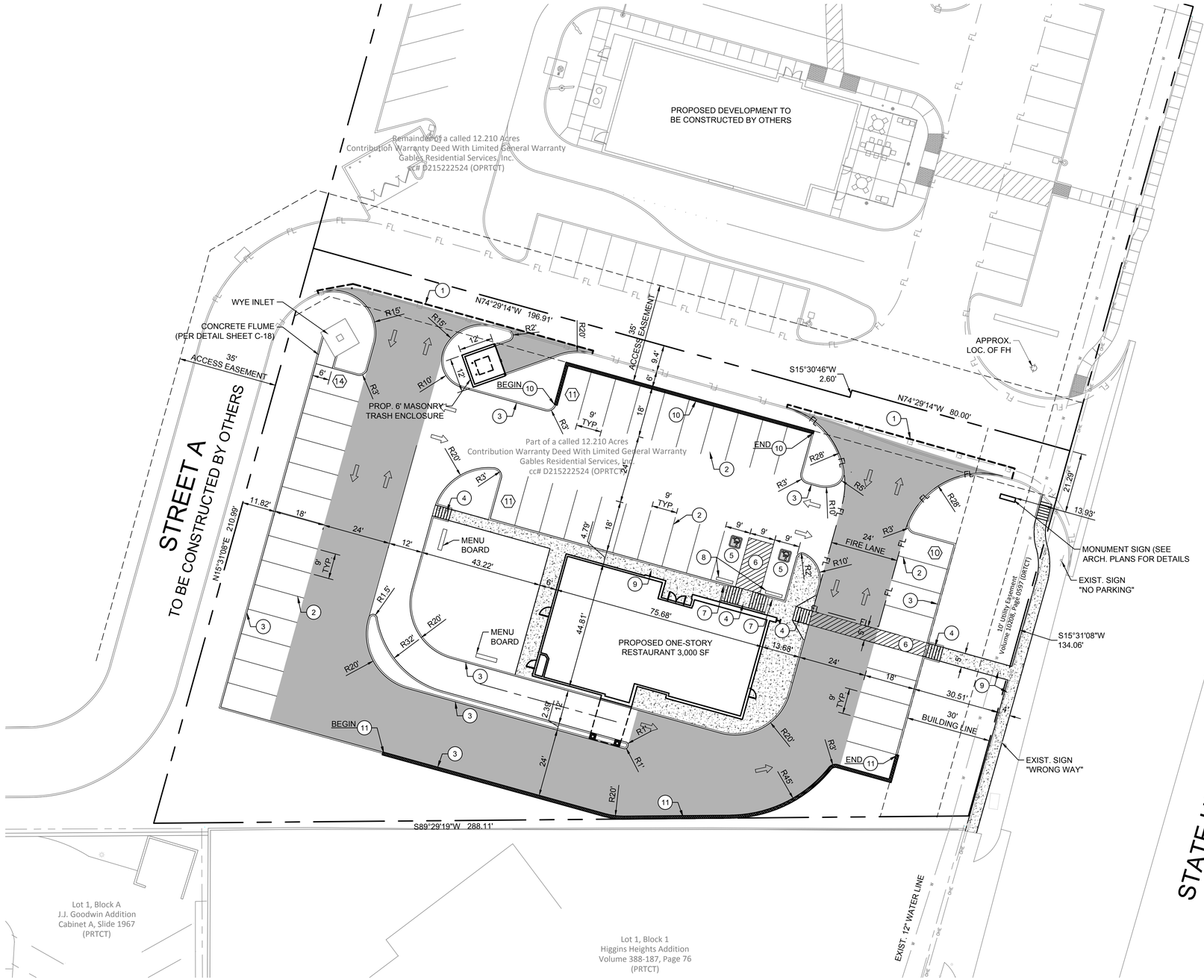

BENCHMARK

CITY OF GRAND PRAIRIE GPS MONUMENT #6
ALUMINUM CAP MONUMENT STAMPED G.P.S. 6 AT THE NORTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND AVENUE K INTERSECTION
N = 6967503.49, E = 2410580.75 (GRID)
ELEVATION: 547.78'

CITY OF GRAND PRAIRIE GPS MONUMENT #47
ALUMINUM CAP MONUMENT STAMPED G.P.S. 47 AT THE SOUTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND REGENCY DRIVE INTERSECTION
N = 697259.96, E = 2412239.43 (GRID)
ELEVATION: 525.85'

BENCHMARK ELEVATION 543.31'
CITY OF ARLIGNTON CONTROL MONUMENT NO. AROI-ALUMINUM DISC LOCATED IN ABUTMENT AT THE NORTHWEST CORNER OF THE GREEN OAKS BRIDGE OVER HIGHWAY NO. 360

GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

LEGEND	
	PROPOSED LIGHT DUTY PAVEMENT
	PROPOSED HEAVY DUTY PAVEMENT
	PROPOSED SIDEWALK
	PROPOSED CONCRETE CURB AND GUTTER
6	PARKING COUNT

CONSTRUCTION SCHEDULE	
1	SAW CUT FULL DEPTH EXISTING PAVEMENT
2	4" PARKING STALL STRIPING COLOR: WHITE (TYP)
3	CURB & GUTTER PER DETAILS SHEET C-8
4	PROPOSED PEDESTRIAN RAMP PER DETAIL SHEET C-8
5	HANDICAP SYMBOL PER DETAILS SHEET C-8
6	PAVEMENT STRIPING PER DETAILS SHEET C-8
7	HANDICAP SIGN PER DETAILS SHEET C-8
8	CURB STOP PER DETAILS SHEET C-8
9	SIDEWALK PER DETAIL SHEET C-8
10	PROPOSED CURB W/ WALL SEE DETAIL SHEET C-8
11	PROPOSED RETAINING WALL

SITE DATA	
TOTAL SITE AREA	47,622 SF (1.09 AC)
EX. ZONING	GR-1
BUILDING USE	DRIVE THROUGH RESTAURANT
PARKING TABLE	
PARKING RATIO REQUIRED	DRIVE THROUGH RESTAURANT (1 PER 100 SF)
PARKING REQUIRED	30 SPACES (2 ADA)
STANDARD PARKING PROVIDED	47
HANDICAP PARKING PROVIDED	2

NOTES:
1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. REFER TO ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS AND EXACT DOOR LOCATIONS.
3. REFER TO ARCHITECTURAL PLANS FOR FENCE AND GATE DETAILS.

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04/18/2016

EL POLLO LOCO
2125 N. HIGHWAY 360
GRAND PRAIRIE, TEXAS 75050

No.	DATE	REVISION	BY

DIMENSION CONTROL AND PAVING PLAN

DESIGN:	CLC
DRAWN:	CLC
CHECKED:	MAM
DATE:	4/18/2016

SHEET
C-3

File No. 2015-145

PLOTTED BY: JVALDEZ
PLOT DATE: 4/21/2016 11:47 AM
LOCATION: C:\EGNYTE\SHARED\PROJECTS\2015-145 EL POLLO GRAND PRAIRIE\CADD\SHEETS\C-3 DIMENSION CONTROL AND PAVING PLAN.DWG
LAST SAVED: 4/21/2016 11:43 AM

LEGEND	
— —695— —	EXISTING CONTOUR
——700——	PROPOSED CONTOUR
×699.50	PROPOSED GRADE (TOP OF PAVEMENT)
ME	MATCH EXISTING
TH	THROAT ELEVATION

GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

NOTES:

1. ALL SPOT ELEVATIONS ARE TO TOP OF PAVING UNLESS OTHERWISE NOTED.
2. EXISTING UTILITIES WERE OBTAINED FROM RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF EXISTING UTILITIES AND NOTIFY THE ENGINEER FOR ANY DISCREPANCIES WITH THIS PLAN.
3. MAXIMUM SLOPE IN LANDSCAPE AREAS ARE NOT TO EXCEED 4:1; MIN EARTH GRADE IS 1%; MIN PAVING GRADE IS 0.5%.
4. ALL CURB HEIGHTS ARE 6-INCHES UNLESS NOTED OTHERWISE.
5. REFER TO GEOTECHNICAL REPORT FOR REQUIREMENTS REGARDING FILL COMPACTION AND MOISTURE CONTENT.
6. REF. STRUCTURAL PLANS, SPECIFICATIONS, AND GEOTECHNICAL REPORT FOR ALL BUILDING PAD PREPARATION CRITERIA.
7. THE CONTRACTOR SHALL CONSTRUCT ALL BARRIER FREE RAMPS PER CITY OF GRAND PRAIRIE AND ADA STANDARDS.
8. GRADING FOR ALL SIDEWALKS AND ACCESSIBLE ROUTES INCLUDING CROSSING DRIVEWAYS SHALL CONFORM TO ADA STANDARDS. SLOPES SHALL NOT EXCEED 5% LONGITUDINAL SLOPE OR 2% CROSS SLOPE. SIDEWALK ACCESS TO EXTERNAL BUILDING DOORS SHALL BE ADA COMPLIANT. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF ADA CRITERIA CANNOT BE MET AT ANY LOCATION.
9. GRADING OF ALL HANDICAPPED SPACES AND ROUTES IS TO CONFORM TO LOCAL, STATE, AND FEDERAL GUIDELINES.
10. CONTRACTOR SHALL ADJUST EXISTING VALVES, MANHOLE RIMS, ETC. AS NECESSARY TO MATCH FINISHED GRADE.
11. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM EXISTING & PROPOSED BUILDINGS.
12. SEE GABLES AT GREEN OAKS DAIRY QUEEN RESTAURANT CIVIL PLANS DATED 11-18-2015 FOR DETAILS REGARDING PROPOSED GRADES ON "STREET A". REFERENCE PLANS FOR STORM DRAIN DETAILS.

BENCHMARK

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ALUMINUM CAP MONUMENT STAMPED G.P.S. 6 AT THE NORTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND AVENUE K INTERSECTION
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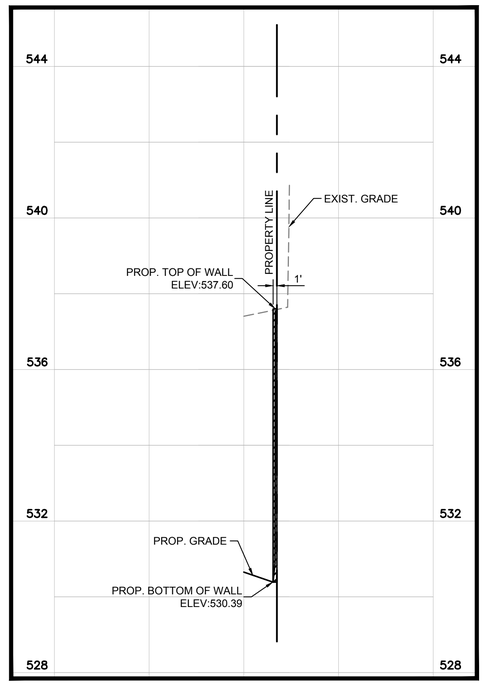
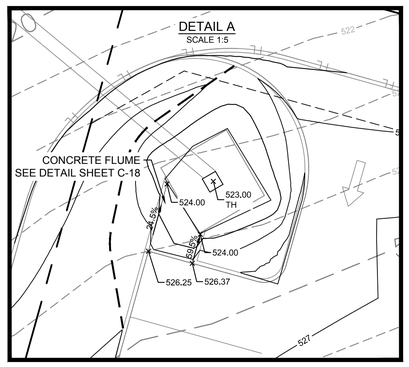
BENCHMARK ELEVATION 543.31'
CITY OF ARLIGNTON CONTROL MONUMENT NO. AROI-ALUMINUM DISC LOCATED IN ABUTMENT AT THE NORTHWEST CORNER OF THE GREEN OAKS BRIDGE OVER HIGHWAY NO. 360

WALL CROSS SECTION A-A
SCALE 1"=20'



DETAIL A
SCALE 1:5



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STATE OF TEXAS
MATT MOORE
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LICENSED
PROFESSIONAL ENGINEER
04/18/2016

EL POLLO LOCO
2125 N. HIGHWAY 360
GRAND PRAIRIE, TEXAS 75050

No.	DATE	REVISION	BY

GRADING PLAN

DESIGN:	CLC
DRAWN:	CLC
CHECKED:	MAM
DATE:	4/18/2016

SHEET
C-4

File No. 2015-145

PLOTTED BY: JVALDEZ
PLOT DATE: 4/21/2016 11:47 AM
LOCATION: C:\EGNYTE\SHARED\PROJECTS\2015-145 EL POLLO GRAND PRAIRIE\CADD\SHEETS\C-4 GRADING PLAN.DWG
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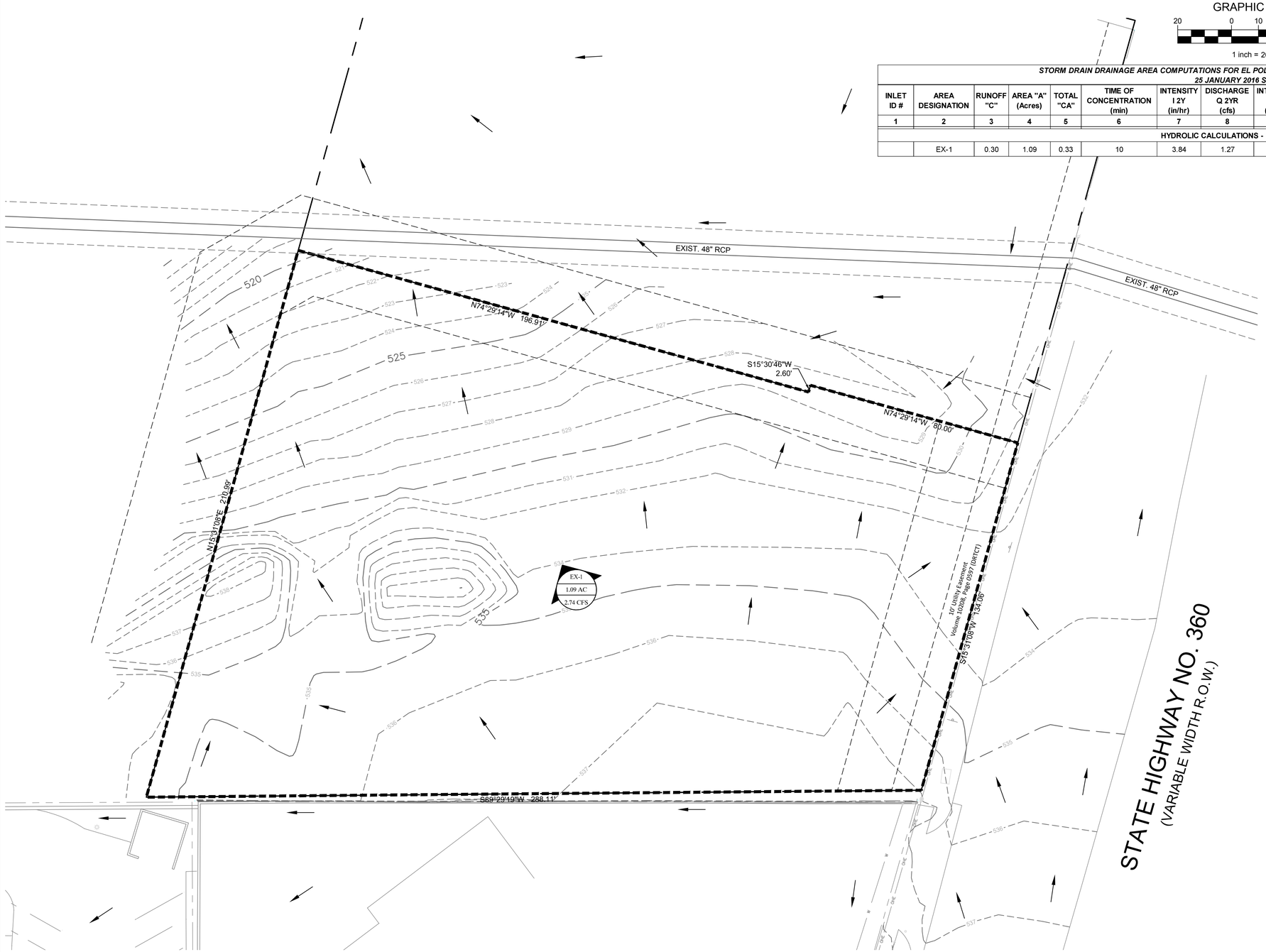

GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

LEGEND	
A-1 / 1 AC / 10 CFS	– DRAINAGE AREA –DRAINAGE AREA IN ACRES – FLOW FOR DRAINAGE AREA IN CFS
	DIRECTION OF FLOW
	DRAINAGE AREA BOUNDARY

STORM DRAIN DRAINAGE AREA COMPUTATIONS FOR EL POLLO LOCO LOT 2/BLOCK A/ GREEN OAKS ADDITION - 25 JANUARY 2016 SUBMITTAL

INLET ID #	AREA DESIGNATION	RUNOFF "C"	AREA "A" (Acres)	TOTAL "CA"	TIME OF CONCENTRATION (min)	INTENSITY I 2Y (in/hr)	DISCHARGE Q 2YR (cfs)	INTENSITY I 10Y (in/hr)	DISCHARGE Q 10YR (cfs)	INTENSITY I 100Y (in/hr)	DISCHARGE Q 100YR (cfs)	COMMENTS
1	2	3	4	5	6	7	8	9	10	11	12	13
HYDROLIC CALCULATIONS - PRE DEVELOPMENT												
	EX-1	0.30	1.09	0.33	10	3.84	1.27	5.75	1.90	8.30	2.74	SHEET FLOWS TO EX. S.D. SYSTEM

BENCHMARK

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ELEVATION: 525.85'

BENCHMARK ELEVATION 543.31'
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TEXAS REGISTRATION #14199
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STATE OF TEXAS
MATT MOORE
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LICENSED
PROFESSIONAL ENGINEER
04/18/2016

EL POLLO LOCO
2125 N. HIGHWAY 360
GRAND PRAIRIE, TEXAS 75050

No.	DATE	REVISION	BY

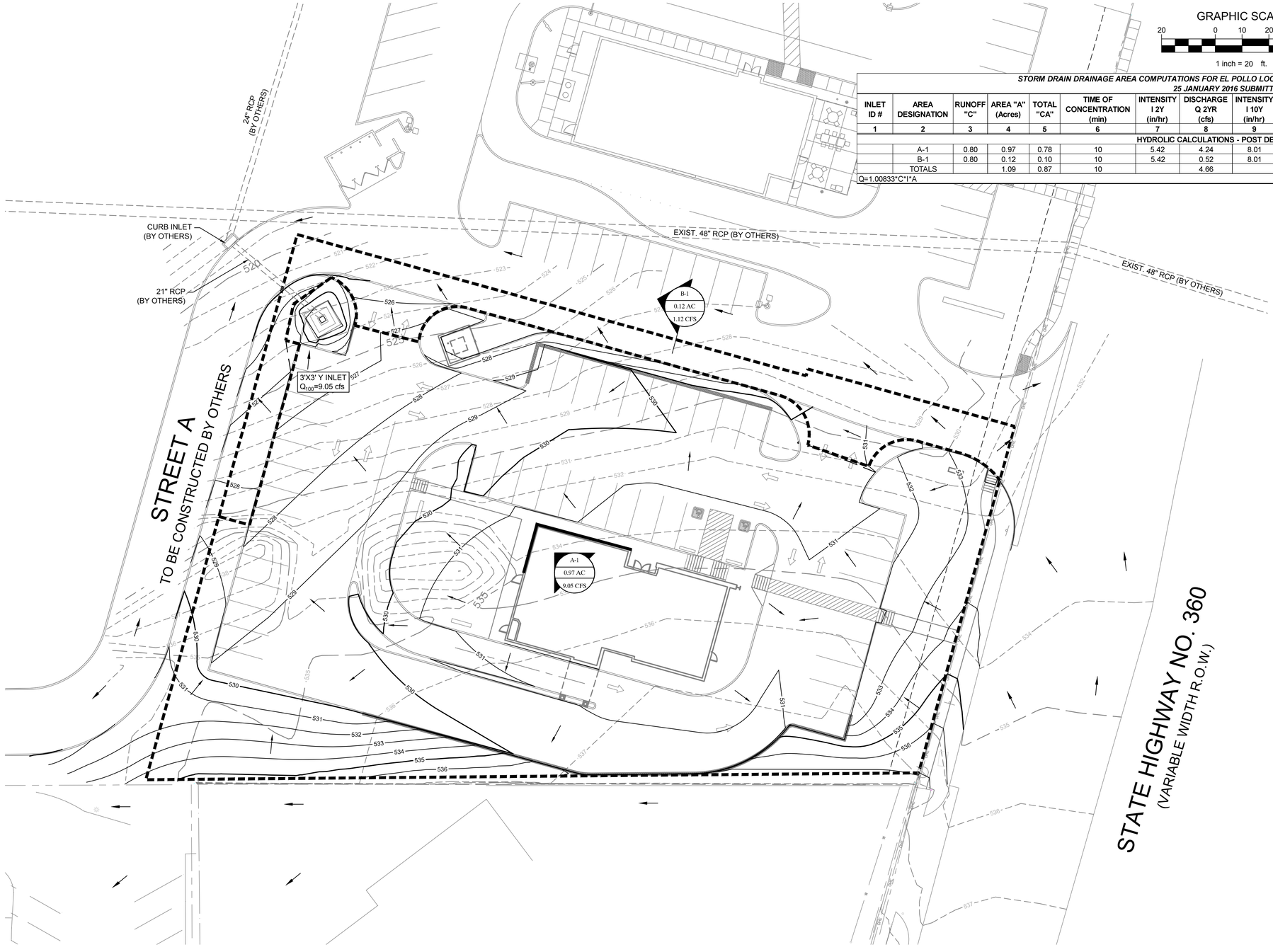
EXISTING DRAINAGE AREA MAP

DESIGN: CLC
DRAWN: CLC
CHECKED: MAM
DATE: 4/18/2016

SHEET
C-5

File No. 2015-145

PLOTTED BY: JVALDEZ
PLOT DATE: 4/21/2016 11:48 AM
LOCATION: C:\EGNYTE\SHARED\PROJECTS\2015-145 EL POLLO GRAND PRAIRIE\CADD\SHEETS\C-5 EXISTING DRAINAGE AREA MAP.DWG
LAST SAVED: 3/24/2016 4:05 PM



GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

LEGEND	
A-1 / 1 AC / 10 CFS	– DRAINAGE AREA –DRAINAGE AREA IN ACRES – FLOW FOR DRAINAGE AREA IN CFS
	DIRECTION OF FLOW
	DRAINAGE AREA BOUNDARY

STORM DRAIN DRAINAGE AREA COMPUTATIONS FOR EL POLLO LOCO LOT 2/BLOCK A/ GREEN OAKS ADDITION - 25 JANUARY 2016 SUBMITTAL

INLET ID #	AREA DESIGNATION	RUNOFF "C"	AREA "A" (Acres)	TOTAL "CA"	TIME OF CONCENTRATION (min)	INTENSITY I 2Y (in/hr)	DISCHARGE Q 2YR (cfs)	INTENSITY I 10Y (in/hr)	DISCHARGE Q 10YR (cfs)	INTENSITY I 100Y (in/hr)	DISCHARGE Q 100YR (cfs)	COMMENTS
1	2	3	4	5	6	7	8	9	10	11	12	13
HYDROLIC CALCULATIONS - POST DEVELOPMENT												
	A-1	0.80	0.97	0.78	10	5.42	4.24	8.01	6.27	11.57	9.05	DRAINS TO 3'X3' Y INLET
	B-1	0.80	0.12	0.10	10	5.42	0.52	8.01	0.78	11.57	1.12	DRAINS TO 5' CURB INLET
	TOTALS		1.09	0.87	10		4.66		7.05		10.17	TOTALS
Q=1.00833*C*I*A												

BENCHMARK

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04/18/2016

EL POLLO LOCO
2125 N. HIGHWAY 360
GRAND PRAIRIE, TEXAS 75050

No.	DATE	REVISION	BY

PROPOSED DRAINAGE AREA MAP

DESIGN:	CLC
DRAWN:	CLC
CHECKED:	MAM
DATE:	4/18/2016

SHEET
C-6

File No. 2015-145

PLOTTED BY: JVALDEZ
PLOT DATE: 4/21/2016 11:48 AM
LOCATION: C:\EGNYTE\SHARED\PROJECTS\2015-145 EL POLLO GRAND PRAIRIE\CADD\SHEETS\C-6 PROPOSED DRAINAGE AREA MAP.DWG
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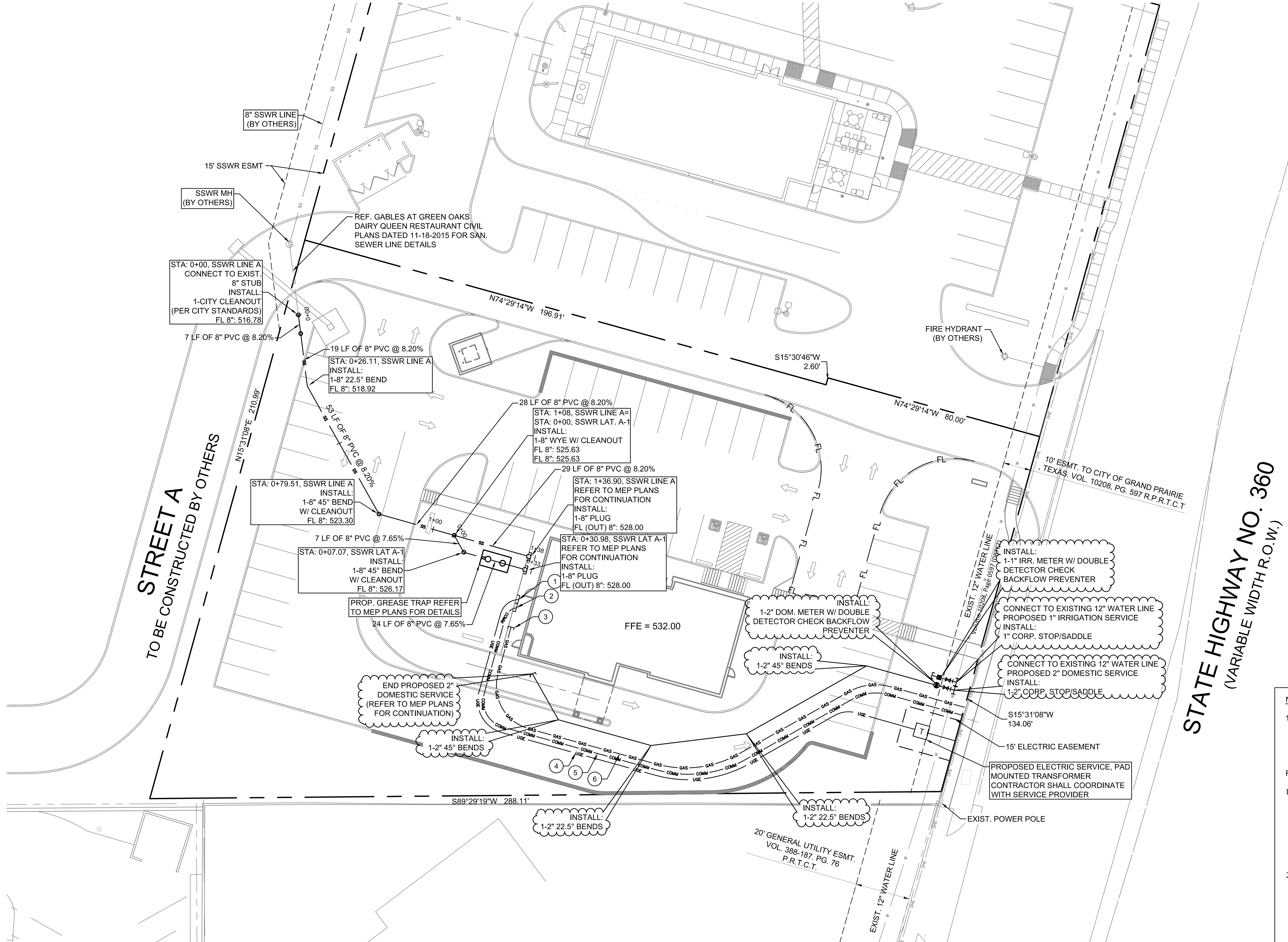

8" SSWR LINE (BY OTHERS)
15' SSWR ESMT
SSWR MH (BY OTHERS)
REF. GABLES AT GREEN OAKS DAIRY QUEEN RESTAURANT CIVIL PLANS DATED 11-18-2015 FOR SAN. SEWER LINE DETAILS
STA: 0+00, SSWR LINE A CONNECT TO EXIST. 8" STUB INSTALL: 1-CITY CLEANOUT (PER CITY STANDARDS) FL 8": 516.78
7 LF OF 8" PVC @ 8.20%
19 LF OF 8" PVC @ 8.20%
STA: 0+26.11, SSWR LINE A INSTALL: 1-8" 22.5° BEND FL 8": 518.92
53 LF OF 8" PVC @ 8.20%
N15°31'08"E 210.99'
N74°29'14"W 196.91'
S15°30'46"W 2.60'
N74°29'14"W 80.00'
FIRE HYDRANT (BY OTHERS)
28 LF OF 8" PVC @ 8.20%
STA: 1+08, SSWR LINE A= STA: 0+00, SSWR LAT. A-1 INSTALL: 1-8" WYE W/ CLEANOUT FL 8": 525.63 FL 8": 525.63
29 LF OF 8" PVC @ 8.20%
STA: 1+36.90, SSWR LINE A REFER TO MEP PLANS FOR CONTINUATION INSTALL: 1-8" PLUG FL (OUT) 8": 528.00
STA: 0+79.51, SSWR LINE A INSTALL: 1-8" 45° BEND W/ CLEANOUT FL 8": 523.30
7 LF OF 8" PVC @ 7.65%
STA: 0+07.07, SSWR LAT A-1 INSTALL: 1-8" 45° BEND W/ CLEANOUT FL 8": 526.17
STA: 0+30.98, SSWR LAT A-1 REFER TO MEP PLANS FOR CONTINUATION INSTALL: 1-8" PLUG FL (OUT) 8": 528.00
PROP. GREASE TRAP REFER TO MEP PLANS FOR DETAILS
24 LF OF 8" PVC @ 7.65%
STREET A
TO BE CONSTRUCTED BY OTHERS
FFE = 532.00
10' ESMT. TO CITY OF GRAND PRAIRIE TEXAS. VOL. 10208, PG. 597 R.P.R.T.C.T
STATE HIGHWAY NO. 360
(VARIABLE WIDTH R.O.W.)
EXIST. 12" WATER LINE
INSTALL: 1-1" IRR. METER W/ DOUBLE DETECTOR CHECK BACKFLOW PREVENTER
INSTALL: 1-2" DOM. METER W/ DOUBLE DETECTOR CHECK BACKFLOW PREVENTER
CONNECT TO EXISTING 12" WATER LINE PROPOSED 1" IRRIGATION SERVICE INSTALL: 1" CORP. STOP/SADDLE
CONNECT TO EXISTING 12" WATER LINE PROPOSED 2" DOMESTIC SERVICE INSTALL: 1-2" CORP. STOP/SADDLE
INSTALL: 1-2" 45° BENDS
END PROPOSED 2" DOMESTIC SERVICE (REFER TO MEP PLANS FOR CONTINUATION)
INSTALL: 1-2" 45° BENDS
S15°31'08"W 134.06'
15' ELECTRIC EASEMENT
PROPOSED ELECTRIC SERVICE, PAD MOUNTED TRANSFORMER CONTRACTOR SHALL COORDINATE WITH SERVICE PROVIDER
S89°29'19"W 288.11'
INSTALL: 1-2" 22.5° BENDS
INSTALL: 1-2" 22.5° BENDS
EXIST. POWER POLE
20' GENERAL UTILITY ESMT. VOL. 388-187, PG. 76 P.R.T.C.T.
EXIST. 12" WATER LINE

GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

LEGEND	
— w —	EXISTING WATER MAIN
— ss — (S)	EXISTING SANITARY SEWER AND MANHOLE
— w —	PROPOSED WATER LINE
— SS — o	PROPOSED SANITARY SEWER LINE AND CLEAN OUT
— UGE —	PROPOSED UNDERGROUND ELECTRIC
— UGT —	PROPOSED UNDERGROUND COMMUNICATION LINE
— GAS —	PROPOSED UNDERGROUND GAS LINE

CONSTRUCTION SCHEDULE	
1	ELECTRIC SERVICE CONNECTION: SEE MEP PLANS FOR CONTINUATION OF SERVICE
2	COMMUNICATION SERVICE CONNECTION: SEE MEP PLANS FOR CONTINUATION OF SERVICE
3	GAS SERVICE CONNECTION: SEE MEP PLANS FOR CONTINUATION OF SERVICE
4	ELECTRIC SERVICE: CONTACT SERVICE PROVIDER FOR COORDINATION
5	COMMUNICATION SERVICE: CONTACT SERVICE PROVIDER FOR COORDINATION
6	GAS SERVICE: CONTACT SERVICE PROVIDER FOR COORDINATION

NOTES

1. CONTRACTOR SHALL COORDINATE WITH FRANCHISE UTILITY COMPANIES AND IRRIGATION PLANS TO DETERMINE QUANTITY, SIZE, AND LOCATION FOR ALL CONDUIT AND SLEEVING REQUIRED TO SERVE BUILDING AND SITE. ALL CONDUIT AND SLEEVES SHALL BE INSTALLED PRIOR TO SUBGRADE PREPARATION AND PAVING.

FRANCHISE UTILITY NOTES:

1. THE GAS, ELECTRIC AND TELEPHONE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE LATEST INFORMATION AVAILABLE FROM THE RESPECTIVE FRANCHISE UTILITY COMPANIES. IT IS INTENDED FOR PURPOSES OF GENERAL BIDDING AND BASIC CLARITY. SPECIFIC JOB SITE CONDITIONS SHALL BE FIELD VERIFIED PER NOTES 2 THROUGH 4 BELOW. THE FRANCHISE UTILITY CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR SAID FIELD CONDITIONS AND ASSOCIATED REVISIONS REQUIRED BY THE RESPECTIVE UTILITY COMPANIES INVOLVED.
2. THE FRANCHISE UTILITY CONTRACTOR SHALL CONTACT THE RESPECTIVE FRANCHISE UTILITY COMPANIES, VERIFY ALL REQUIREMENTS AND EQUIPMENT, AND FURNISH AND INSTALL, INCLUDING BUT NOT LIMITED TO, ALL METERS, TRANSFORMERS, CONDUIT, CONCRETE PADS, TRENCHING, AND BACKFILL NECESSARY FOR PROPER INSTALLATION. FRANCHISE UTILITY CONTRACTOR SHALL ALSO PAY ALL FEES AND CHARGES INCURRED AND COORDINATE WITH OTHER FRANCHISE UTILITY COMPANIES.
3. THE FRANCHISE UTILITY CONTRACTOR SHALL FIELD VERIFY, IN THE PRESENCE OF THE RESPECTIVE UTILITY COMPANY REPRESENTATIVES, THE LOCATION OF ALL EXISTING AND PROPOSED UTILITY SERVICES AND EQUIPMENT. THE FRANCHISE UTILITY CONTRACTOR SHALL INCLUDE IN HIS BID SUFFICIENT FUNDS TO COVER ALL COSTS REQUIRED BY UTILITY COMPANIES TO PROVIDE NEW SERVICES AND/OR UPGRADE EXISTING SERVICES. NO ALLOWANCES WILL BE MADE FOR FRANCHISE UTILITY CONTRACTOR'S UNFAMILIARITY WITH THE EXISTING CONDITION, REQUIREMENTS OF THE NEW CONDITIONS, AND/OR FAILURE TO COORDINATE INSTALLATION.
4. CONTRACTOR SHALL VERITY THAT METER AND TRANSFORMER LOCATIONS SHOWN MEET DESIGN CRITERIA BY FRANCHISE UTILITY COMPANIES FOR, BUT NOT LIMITED TO, THE OFFSET DISTANCE FROM FACE OF BUILDING.
5. LOCATION OF SAMPLE PORT SHALL COMPLY WITH THE CITY STANDARD DETAIL OR AT THE DIRECTION OF ENVIRONMENTAL SERVICES.

BENCHMARK

CITY OF GRAND PRAIRIE GPS MONUMENT #6
ALUMINUM CAP MONUMENT STAMPED G.P.S. 6 AT THE NORTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND AVENUE K INTERSECTION
N = 6967503.49, E = 2410580.75 (GRID)
ELEVATION: 547.78'

CITY OF GRAND PRAIRIE GPS MONUMENT #47
ALUMINUM CAP MONUMENT STAMPED G.P.S. 47 AT THE SOUTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND REGENCY DRIVE INTERSECTION
N = 697259.96, E = 2412239.43 (GRID)
ELEVATION: 525.85'

BENCHMARK ELEVATION 543.31'
CITY OF ARLINGTON CONTROL MONUMENT NO. AROI-ALUMINUM DISC LOCATED IN ABUTMENT AT THE NORTHWEST CORNER OF THE GREEN OAKS BRIDGE OVER HIGHWAY NO. 360

PLOTTED BY: JVALDEZ
PLOT DATE: 4/21/2016 11:49 AM
LOCATION: C:\EGNYTE\SHARED\PROJECTS\2015-145 EL POLLO GRAND PRAIRIE\CADD\SHEETS\C-7 UTILITY PLAN.DWG
LAST SAVED: 4/18/2016 1:48 PM

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406 BEDFORD, TX 76021
PHONE: 817.281.0572 WWW.CLAYMOOREENG.COM

STATE OF TEXAS
MATT MOORE
95813
LICENSED PROFESSIONAL ENGINEER
04/18/2016

EL POLLO LOCO
2125 N. HIGHWAY 360
GRAND PRAIRIE, TEXAS 75050

No.	DATE	REVISION	BY

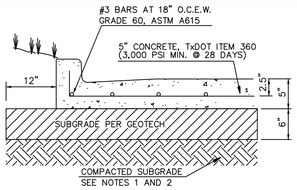
UTILITY PLAN

DESIGN:	CLC
DRAWN:	CLC
CHECKED:	MAM
DATE:	4/18/2016

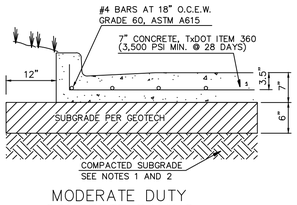
SHEET

C-7

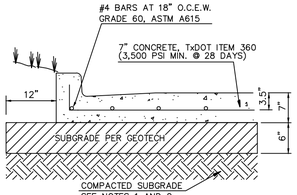
File No. 2015-145



LIGHT DUTY
CONCRETE PAVING



MODERATE DUTY
CONCRETE PAVING



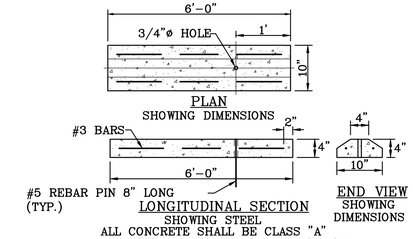
DUMPSTER AREA
CONCRETE PAVING

GENERAL PAVING NOTES

1. REFER TO GEOTECHNICAL REPORT FOR ALL SUBGRADE SPECIFICATIONS AND REQUIREMENTS.
2. FOR PREPARATION OF PAVEMENT SUBGRADE, FILL PLACED BELOW FINISHED SUBGRADE ELEVATION IN FILL AREAS IN ALL AREAS TO BE PAVED SHALL BE COMPACTED TO ATLEAST 95% OF THE STANDARD EFFORT (ASTM D698) AT OPTIMUM TO PLUS 2 PERCENTAGE POINTS ABOVE ITS OPTIMUM MOISTURE CONTENT (OPT TO +2%).
3. CONCRETE SHALL HAVE A MINIMUM 3,000 PSI COMPRESSIVE STRENGTH FOR MEDIUM DUTY AND DUMPSTER AREA AND 3,500 PSI FOR LIGHT DUTY AT 28 DAYS. JOINTS IN CONCRETE PAVING SHALL BE FORMED AT A MAXIMUM OF 15 FEET. CONCRETE SHALL INCLUDE AIR ENTRAINMENT OF 4.5+1.5 PERCENT. ALL OTHER JOINT SPACING SHALL BE INSTALLED PER PROJECT SPECIFICATIONS.
4. JOINTS IN CONCRETE PAVEMENT SHALL NOT EXCEED 15 FOOT SPACING.

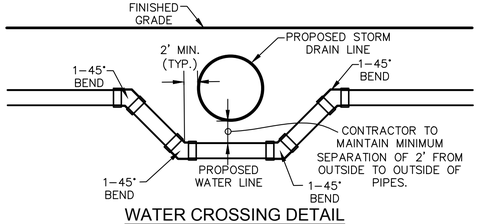
PAVING DETAILS

SCALE: NONE



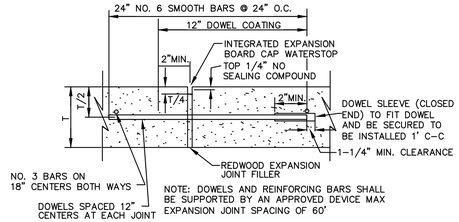
CONCRETE CURB STOP

N.T.S.



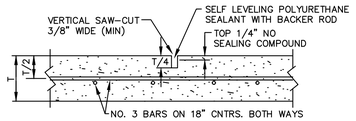
WATER CROSSING DETAIL

N.T.S.



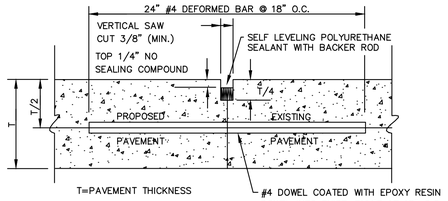
TRANSVERSE EXPANSION/ ISOLATION JOINT DETAIL

SCALE: NONE



CONTRACTION JOINT DETAIL

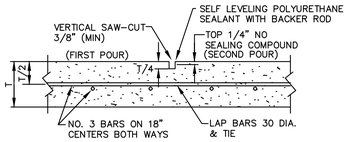
SCALE: NONE



NOTES:
1. DOWEL BARS SHALL BE DRILLED INTO PAVEMENT HORIZONTALLY BY USE OF A MECHANICAL RIG. DRILLING BY HAND IS NOT ACCEPTABLE

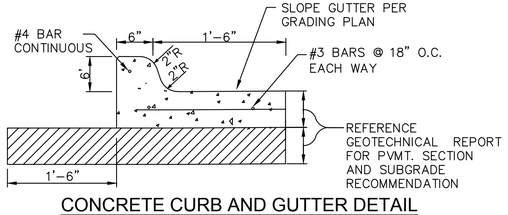
LONGITUDINAL BUTT JOINT DETAIL

SCALE: NONE



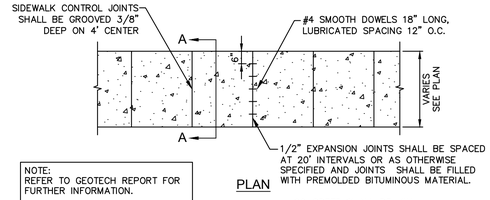
CONSTRUCTION JOINT DETAIL

SCALE: NONE



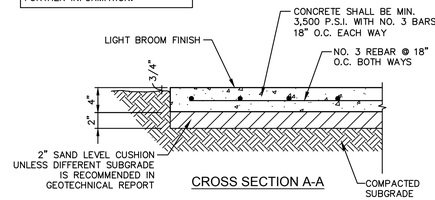
CONCRETE CURB AND GUTTER DETAIL

SCALE: NONE



NOTE:
REFER TO GEOTECH REPORT FOR FURTHER INFORMATION.

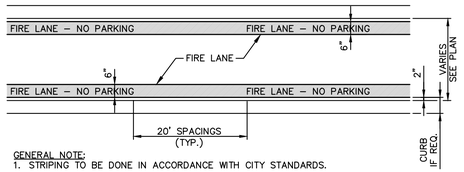
PLAN



CROSS SECTION A-A

PRIVATE CONCRETE SIDEWALK DETAIL

N.T.S.

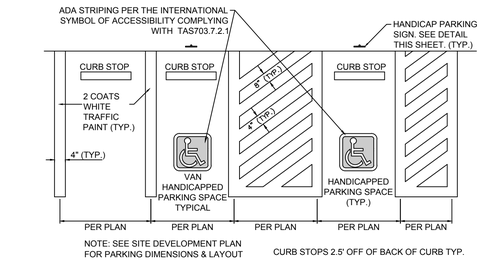


GENERAL NOTE:
1. STRIPING TO BE DONE IN ACCORDANCE WITH CITY STANDARDS.

STRIPING DETAIL NOTES:
1. PAINT:
   1.1. STRIPE SHALL BE SIX (6) INCHES WIDE PAINTED WITH AN EXTERIOR ACRYLIC LATEX PAINT.
      A. COLOR SHALL BE "TRAFFIC RED" GLIDDEN NO. 63251 OR EQUAL.
   1.1. LETTERS SHALL BE FOUR (4) INCHES HIGH PAINTED WITH AN EXTERIOR ACRYLIC LATEX PAINT.
      B. COLOR SHALL BE "TRAFFIC WHITE" GLIDDEN NO. 563245 OR EQUAL.
2. APPLICATION:
   2.1. STRIPE MAY BE BRUSHED OR SPRAYED, ONE COAT TO FINISH.
   2.2. LETTERS SHALL BE STENCIL FORMED, BRUSH APPLIED AND SPACED AS DETAILED ON THIS SHEET.

FIRE LANE STRIPING DETAIL

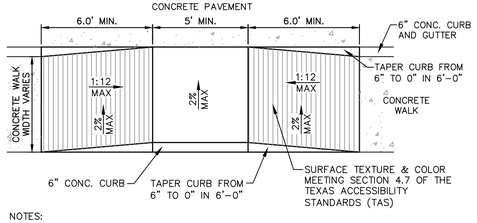
N.T.S.



NOTE: SEE SITE DEVELOPMENT PLAN FOR PARKING DIMENSIONS & LAYOUT

CURB STOPS 2.5' OFF OF BACK OF CURB TYP.

HANDICAPPED PARKING DETAIL

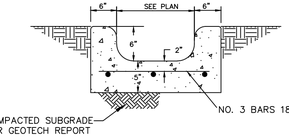


NOTES:
1. ALL HANDICAPPED SIGNAGE AND MARKINGS TO BE IN ACCORDANCE WITH FEDERAL STATE AND AND LOCAL REGULATIONS.
2. MAXIMUM SLOPE FOR HANDICAPPED ACCESSIBLE PATHS ARE 5% WITH A MAXIMUM CROSS FALL SLOPE OF 2%. THE FIRST FIVE FEET FROM THE DOOR IS NOT TO EXCEED 2% IN ANY DIRECTION.
3. TAPERED CURB AND GUTTER SECTION. MAINTAIN GUTTER FLOWLINE AS REQUIRED.
4. RAMP SHALL BE CONSTRUCTED OF 4" THICK, 3000 PSI CONCRETE WITH 6"x6" W2.9xW2.9 WELDED WIRE REINF.

NOTE:
REFER TO GEOTECH REPORT FOR FURTHER INFORMATION.

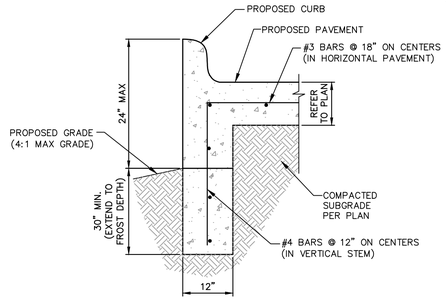
PRIVATE HANDICAPPED RAMPS

N.T.S.



CONCRETE FLUME DETAIL

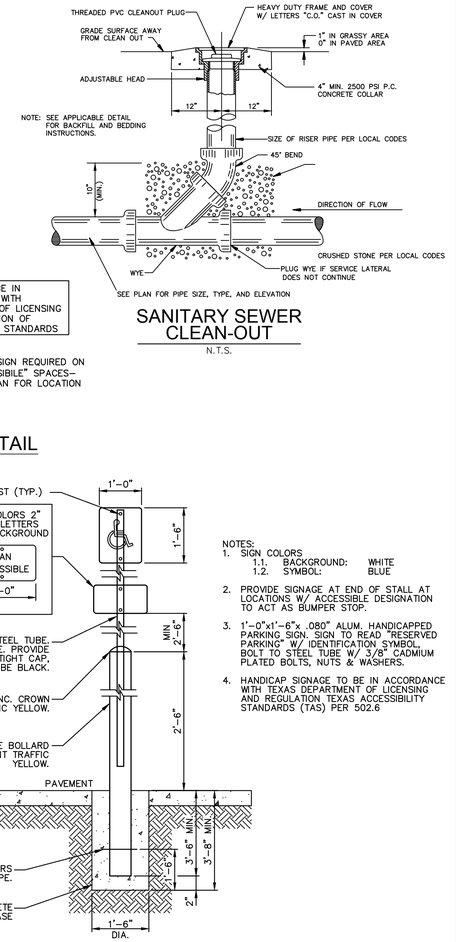
N.T.S.



NOTE:
REFER TO GEOTECH REPORT FOR FURTHER INFORMATION.

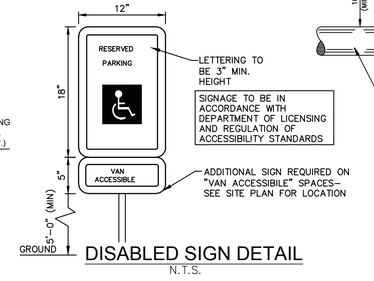
CURB WITH WALL DETAIL

N.T.S.



SANITARY SEWER CLEAN-OUT

N.T.S.



DISABLED SIGN DETAIL

N.T.S.

NOTES:
1. SIGN COLORS
   1.1. BACKGROUND: WHITE
   1.2. SYMBOL: BLUE
2. PROVIDE SIGNAGE AT END OF STALL AT LOCATIONS W/ ACCESSIBLE DESIGNATION TO ACT AS BUMPER STOP.
3. 1'-0"x1'-6"x .080" ALUM. HANDICAPPED PARKING SIGN. SIGN TO READ "RESERVED PARKING" W/ IDENTIFICATION SYMBOL. BOLT TO STEEL TUBE W/ 3/8" CADMIUM PLATED BOLTS, NUTS & WASHERS.
4. HANDICAP SIGNAGE TO BE IN ACCORDANCE WITH TEXAS DEPARTMENT OF LICENSING AND REGULATION TEXAS ACCESSIBILITY STANDARDS (TAS) PER 502.6

"HANDICAPPED PARKING" SIGN POST DETAIL

N.T.S.

TEXAS REGISTRATION #14199
CLAY MOORE ENGINEERING
160 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOOREENG.COM

STATE OF TEXAS
MATT MOORE
95813
LICENSED
PROFESSIONAL ENGINEER
04/18/2016

EL POLLO LOCO
2125 N. HIGHWAY 360
GRAND PRAIRIE, TEXAS 75050

No.	DATE	REVISION	BY

CONSTRUCTION DETAILS

DESIGN:	CLC
DRAWN:	CLC
CHECKED:	MAM
DATE:	4/18/2016

SHEET
C-8

File No. 2015-145

PLOTTED BY: JVALDEZ
PLOT DATE: 4/21/2016 11:49 AM
LOCATION: C:\EGNYTE\SHARED\PROJECTS\2015-145 EL POLLO GRAND PRAIRIE\CADD\SHEETS\C-8 CONSTRUCTION DETAILS.DWG
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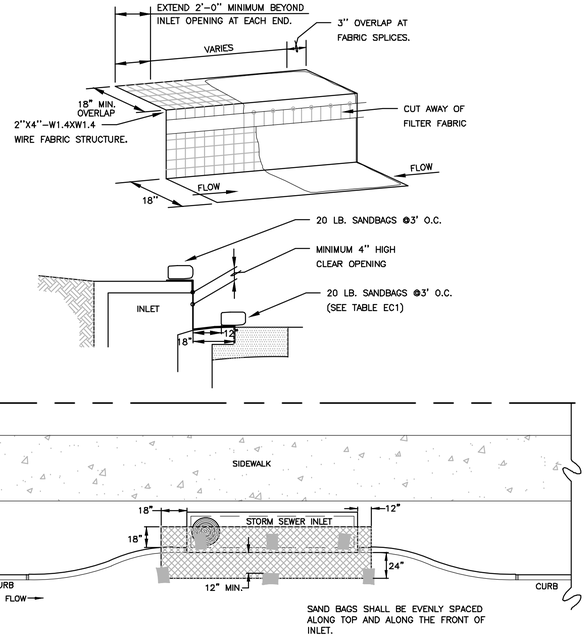


CURB INLET ON GRADE PROTECTION DETAIL

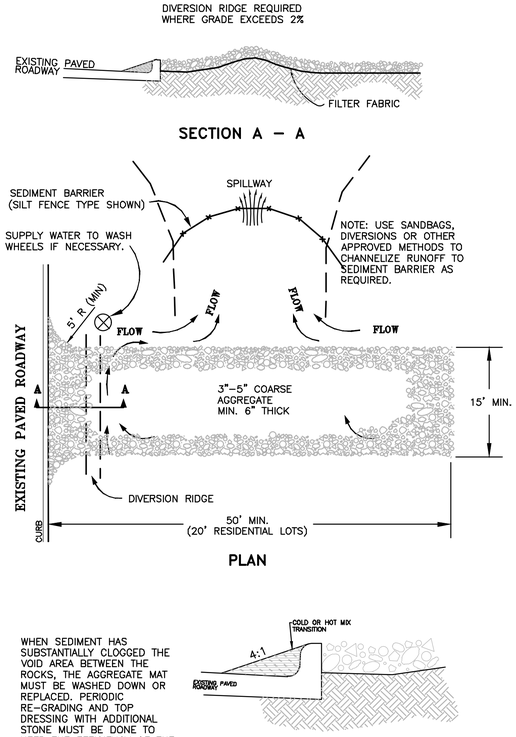
N.T.S.

NOTES:

1. A SECTION OF FILTER FABRIC SHALL BE REMOVED AS SHOWN ON THIS DETAIL TO PROVIDE A 4" MINIMUM CLEAR OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
2. INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 2".
3. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTIONS IF THE STORM-WATER BEGINS TO OVERTOP THE CURB.
4. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

TABLE EC1

INLET OPENING	MINIMUM NUMBER OF SAND BAGS	
	TOP	FRONT
5'	2	3
10'	3	3
15'	3	4
20'	4	4



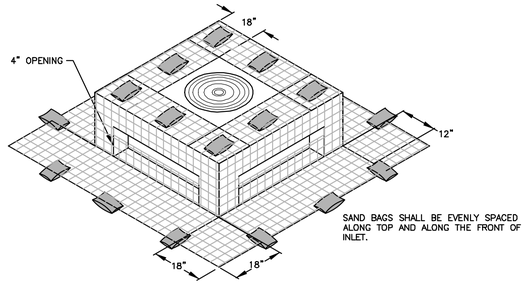
SECTION A – A

PLAN

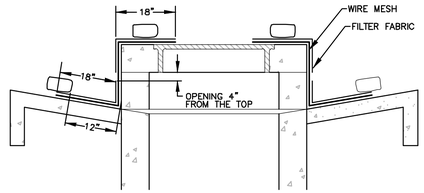
TRANSITION

TEMPORARY STONE CONSTRUCTION ENTRANCE/EXIT

N.T.S.



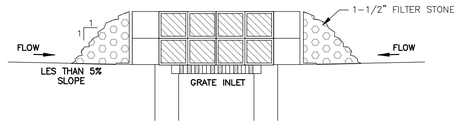
ISOMETRIC VIEW



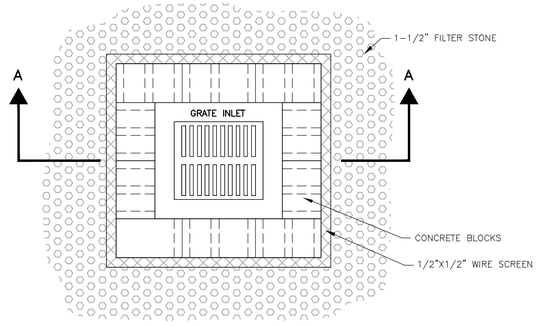
SECTION

FILTER FABRIC WYE INLET PROTECTION

N.T.S.



SECTION A-A



PLAN VIEW

GRATE INLET PROTECTION

N.T.S.

ESTABLISHMENT OF GROUND COVER

1. EIGHTY PERCENT (80%) EVENLY DISTRIBUTED GROUND COVER, WITHOUT LARGE BARE AREAS, SHALL BE ESTABLISHED AFTER THE DESIGNATED AREAS HAVE BEEN COMPLETED TO THE LINES, GRADES AND CROSS SECTIONS SHOWN ON THE PLANS AND PRIOR TO FINAL ACCEPTANCE BY THE CITY ENGINEER.
2. GROUND COVER SHALL BE ESTABLISHED AS PER NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (N.C.T.C.O.G.) "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" 202.6 SEEDING TURF GRASS. COPIES MAY BE OBTAINED FROM THE "NORTH CENTRAL COUNCIL OF GOVERNMENTS", PO DRAWER 5888, ARLINGTON, TEXAS, 76005-5888, PHONE (817) 640-3300, ALSO AVAILABLE AT WWW.PUBLICWORKS.DFWINFO.COM. A COPY OF THE CONTRACT DOCUMENTS, PLANS AND SPECIFICATIONS SHALL BE AVAILABLE ON-SITE AT ALL TIMES BY THE CONTRACTOR.
3. PRIOR TO PLANTING, CONTRACTOR SHALL PROVIDE THE CITY ENGINEER, OR HIS DESIGNEE, WITH THE STATE OF TEXAS CERTIFICATE STATING ANALYSIS OF PURITY AND GERMINATION OF SEED.
4. PLANTING SEASON AND APPLICATION RATES. ALL PLANTING SHALL BE DONE BETWEEN THE DATES SPECIFIED IN TABLE 1, FOR EACH GRASS TYPE EXCEPT WHEN SPECIFICALLY AUTHORIZED IN WRITING. THE SEEDS PLANTED PER ACRE SHALL BE OF A TYPE SPECIFIED WITH THE MIXTURE, RATE AND PLANTING DATES AS SHOWN IN THE TABLE 1, OR AS SPECIFIED BY THE ENGINEER.

TABLE 1. SEEDING TURFGRASS

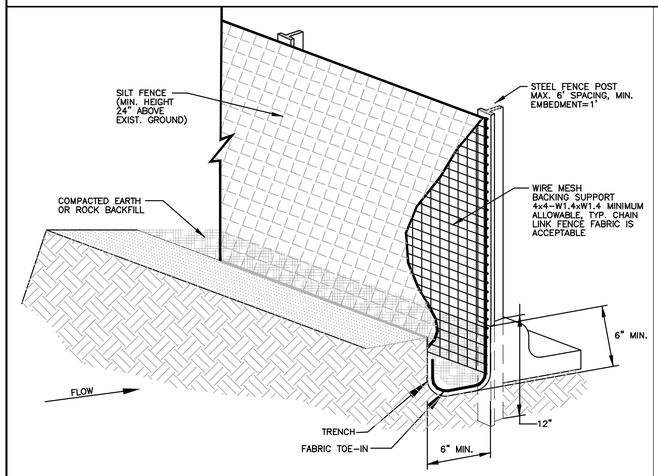
TYPE	PLANTING SEASON	SEED AND RATE
TYPE I	MARCH THROUGH SEPTEMBER	BERMUDA GRASS, HULLED 50-LB (22.7-KG) PLS' PER ACRE
TYPE II	OCTOBER THROUGH FEBRUARY	RYE GRASS, 100-LB (45.4-KG) PLS PER ACRE COMBINED WITH BERMUDA GRASS, HULLED 20-LB (9.1-KG) PLS' PER ACRE.
OTHER	AS SPECIFIED ON PLANS	AS SPECIFIED ON PLANS

'PLS = Pure Live Seed is determined by multiplying the gross weight times purity times the germination [For example, a 100-lb bag with 85% purity and 80% germination. (PLS=pounds in bag x Purity x germination) 100 x 0.85 x 0.8 = 60.8 -lbs of pure live seed.

5. SEEDED AREAS SHALL BE MAINTAINED, INCLUDING WATERING AND MOWING, AT SUCH TIME AND IN A MANNER AND QUALITY TO ESTABLISH A MINIMUM 80% EVENLY DISTRIBUTED HEAVY GROUND COVER, WITHOUT LARGE BARE AREAS, UNTIL COMPLETION AND FINAL ACCEPTANCE OF THE PROJECT BY THE CITY ENGINEER.
6. IN LIEU OF SILT FENCES, THE CONTRACTOR MAY USE TEMPORARY EROSION CONTROL MATTING AND/OR MULCHING PERIMETER GUARD BY ERTEC (OR EQUAL) TO STABILIZE DISTURBED SOIL AREA. EROSION CONTROL MATTING AND MULCHING SHALL BE INSTALLED IN COMPLIANCE WITH N.C.T.C.O.G. STANDARD SPECIFICATIONS 201.16 AND 201.17. PROPRIETARY PRODUCTS SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS. EROSION CONTROL MATS USED AGAINST PAVED AREAS SHALL HAVE A WIDTH OF NO LESS THAN 10 FEET. NO HAY PRODUCTS SHALL BE USED.
7. ALL MATERIAL INCORPORATED IN THE CONSTRUCTION SHALL BE NEW.

GENERAL NOTES

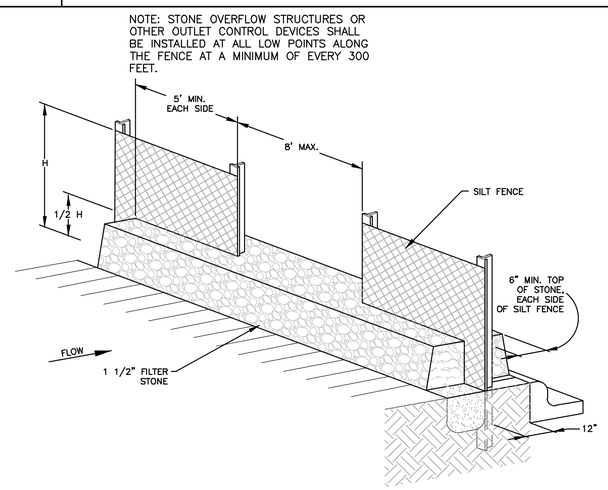
1. INSPECTIONS SHALL BE PERFORMED EVERY 7 DAYS AND ANY REPAIR OR MAINTENANCE ON EROSION CONTROLS AND BEST MANAGEMENT PRACTICES WILL BE MADE PROMPTLY AS NEEDED.
2. NO EXCAVATION OR CURB CUT-BACKS WILL BE ALLOWED WITHIN 18 INCHES OF THE STREET OR CURB WITHOUT APPROVAL FROM THE CITY ENGINEER.
3. STREETS WILL BE KEPT FREE FROM MUD OR EARTH MATERIALS DURING THE CONSTRUCTION.
4. USE OF ALTERNATE EROSION CONTROL DEVICES MUST BE APPROVED IN ADVANCE BY CITY ENGINEER AND SHOWN CLEARLY ON THE EROSION CONTROL PLANS PRIOR TO ANY EARTH DISTURBING ACTIVITIES.
5. THE REQUIREMENTS OF NCTCOG BEST MANAGEMENT PRACTICES STANDARDS SHALL APPLY TO ALL ALTERNATE EROSION CONTROL DEVICES AS AMENDED BY THE CITY.
6. CONCRETE WASH-OUT AREA (FOR PROJECTS WITH CONCRETE POURS) SHALL BE MAINTAINED AND SHALL HAVE SIGNAGE AND BE SHOWN ON EROSION CONTROL DRAWINGS.



ISOMETRIC PLAN VIEW

N.T.S.

NOTE: STONE OVERFLOW STRUCTURES OR OTHER OUTLET CONTROL DEVICES SHALL BE INSTALLED AT ALL LOW POINTS ALONG THE FENCE AT A MINIMUM OF EVERY 300 FEET.



SILT FENCE
STONE OVERFLOW STRUCTURE

N.T.S.

Silt Fence General Notes

1. Steel posts which support the silt fence shall be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of one foot
2. The toe of the silt fence shall be trenched-in with spade or mechanical trencher, so that the down slope face of the trench is flat and perpendicular to the line of flow. Where silt fence cannot be trenched-in (e.g. pavement or rock surface), weight fabric flap with rock on uphill side to prevent flow from seeping under fence.
3. The trench must be a minimum of 6 inches deep and 6 inches wide to allow for the silt fence fabric to be laid in the ground and backfilled with compacted material.
4. Silt fence should be securely fastened to each steel support post or to woven wire which in turn is attached to the steel fence post. There shall be a 3 foot overlap, securely fastened where ends of fabric meet.
5. Accumulated silt shall be removed when it reaches a depth 1'. The silt shall be disposed of at an approved site and in such a manner as to not contribute to additional siltation.
6. Silt fence shall be removed when the site is completely stabilized.
7. Rock filter dams shall be used at concentrated high flow discharge areas in lieu of silt fence.

Erosion Control Mat Notes

5. Erosion control mats shall be in compliance with NCTCOG Best Management Practices. Erosion control mats may be used in place of, or in addition to silt fence for sheet flow filtering applications.
6. Mats shall be installed and anchored securely to the ground in compliance with the manufacturer's recommendations.
7. The width requirement of the erosion control mats shall be comparable to the width of the disturbed surface to be filtered. The minimum width shall be 10 feet for Single Family lots and 20 feet for Commercial applications, unless otherwise approved from the Storm Water Utility Manager.
8. The width of erosion control mats can be reduced when used in conjunction with silt fence and block sod vegetative buffer strips. In no applications will erosion control mats be less than 4 feet wide.

CERTIFICATION:

THIS CITY OF GRAND PRAIRIE STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM THE CITY OF GRAND PRAIRIE.

STATE OF TEXAS
MATT MOORE
95813
LICENSED
PROFESSIONAL ENGINEER

03/28/2016

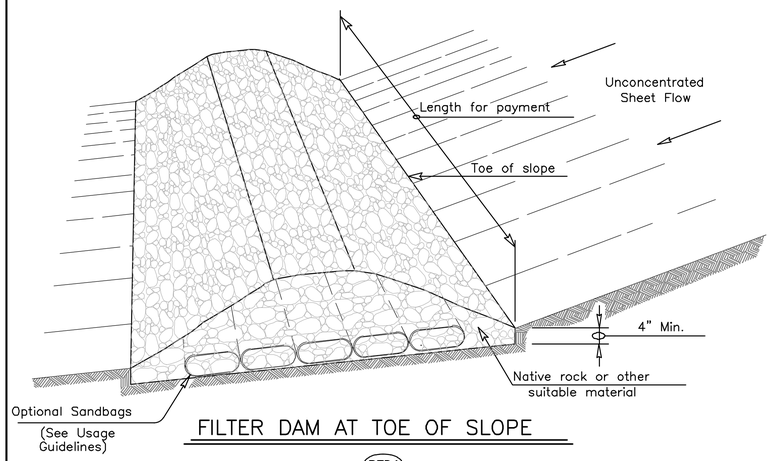
C-9

EROSION CONTROL STANDARD DETAILS

1 OF 2

GRand PRairie TEXAS
ENGINEERING

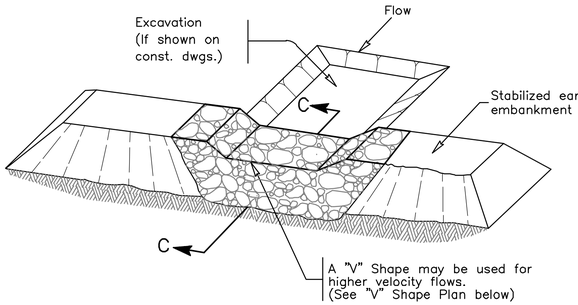
DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
G.F.	J.P.	G.F.	NOV. 2015	N.T.S.		



FILTER DAM AT TOE OF SLOPE

RFD1

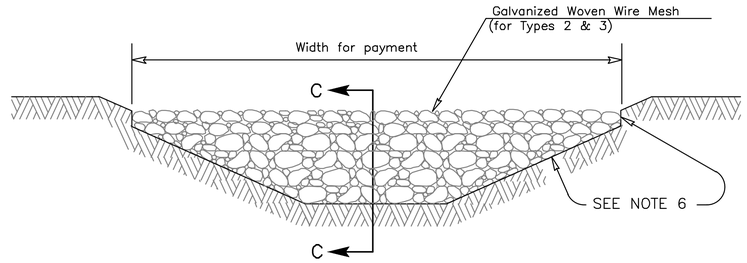
TYPE 1



FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2

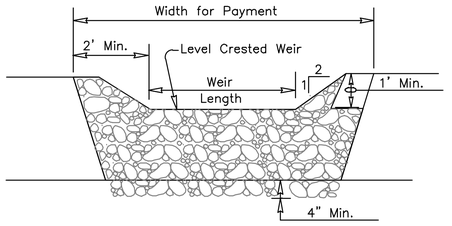
TYPE 1 OR TYPE 2



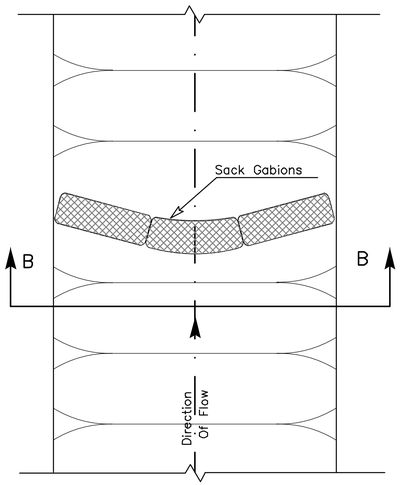
FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

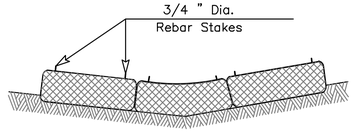
TYPE 1 OR TYPE 2



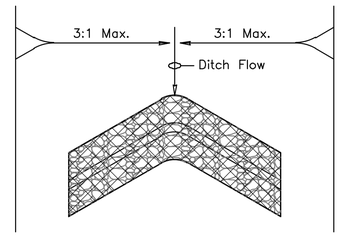
PROFILE



PLAN VIEW

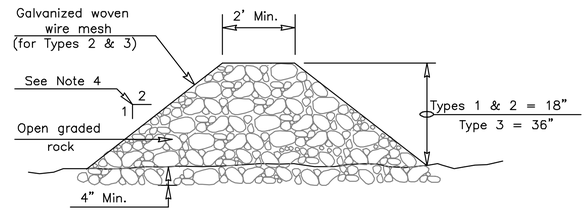


SECTION B–B



"V" SHAPE

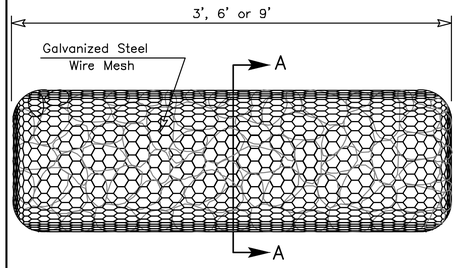
(Plan View)



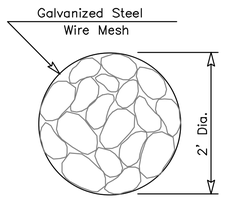
SECTION C–C

PLANS SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3



TYPE 4 (SACK GABIONS)



SECTION A–A

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approx. 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

GENERAL NOTES

1. IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, FILTER DAMS SHOULD BE PLACED NEAR THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED, UPSTREAM AND/OR DOWNSTREAM AT DRAINAGE STRUCTURES, AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
2. MATERIALS (AGGREGATE, WIRE MESH, SANDBAGS, ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR "ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL".
3. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE SWPPP OR EROSION CONTROL PLANS.
4. STONE SIDE SLOPES SHOULD BE 2:1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDE SLOPES OF 6:1 OR FLATTER.
5. MAINTAIN A MINIMUM OF 1' BETWEEN TOP OF ROCK FILTER DAM WEIR AND TOP OF EMBANKMENT FOR FILTER DAMS AT SEDIMENT TRAPS.
6. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" INTO EXISTING GROUND.
7. THE SEDIMENT TRAP FOR PONDING OF SEDIMENT LADEN RUNOFF SHALL BE OF THE DIMENSIONS SHOWN ON THE PLANS.
8. ROCK FILTER DAM TYPES 2 & 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL OPENINGS. THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT & SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. IN STREAM USE THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.
9. SACK GABIONS SHOULD BE STAKED DOWN WITH 3/4" DIA. REBAR STAKES.
10. FLOW OUTLET SHOULD BE ONTO A STABILIZED AREA (VEGETATION, ROCK, ETC.).
11. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.
12. ALL MATERIAL INCORPORATED IN THE CONSTRUCTION SHALL BE NEW.
13. MAX TEMPORARY EARTH SLOPE IS 3:1 WITH 4:1 RECOMMENDED IF PRACTICAL

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STATE OF TEXAS · MATT MOORE · 95813 · LICENSED PROFESSIONAL ENGINEER

03/28/2016

C-10

EROSION CONTROL

ROCK FILTER DAM

ADOPTED FROM TXDOT STANDARD

DETAIL EC(2)–93

2 OF 2

Grand Prairie TEXAS ENGINEERING

DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
G.F.	J.P.	R.A.K.	NOV. 2015	N.T.S.		

THIS INFORMATION IS AN EXPLANATION OF BASIC TESTING PROCEDURES AND IS MEANT TO BE USED IN CONJUNCTION WITH THE CITY OF GRAND PRAIRIE STANDARD CONSTRUCTION DETAILS AND THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION

TESTING OF MATERIALS:

THE CITY WILL PROVIDE BACKFILL, DENSITY AND CONCRETE TESTING FOR ALL PUBLIC AND PRIVATE PROJECTS UNLESS SPECIFIED OTHERWISE. ALL FINAL REPORTS SHALL BE TURNED IN TO THE INSPECTOR AND CONTRACTOR WITHIN FIVE WORKING DAYS. FIELD COPIES MUST BE SUBMITTED TO THE INSPECTOR AND CONTRACTOR UPON COMPLETION OF THE TESTING AND PRIOR TO LEAVING THE JOB SITE. FAILED SAMPLES MUST BE REPORTED TO THE CITY INSPECTOR AND CONTRACTOR IMMEDIATELY.

PRIVATE DEVELOPMENT PROJECTS: THE DEVELOPER/OWNER SHALL PROVIDE ESCROW FUNDS FOR GEOTECHNICAL AND MATERIAL TESTING AS PER CITY ORDINANCE #7951 FOR BACKFILL, DENSITY AND CONCRETE TESTING PRIOR TO BEGINNING ANY CONSTRUCTION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE CITY'S TESTING FIRM AND THE CITY'S INSPECTOR AT LEAST 24 HOURS PRIOR TO ANY REQUIRED TESTING.

THE CONTRACTOR SHALL COORDINATE ALL TESTING ACTIVITIES WITH THE CITY AND ITS INSPECTOR AND SHALL FACILITATE REQUIRED TESTING THROUGHOUT THE CONSTRUCTION PERIOD. THE INSPECTOR SHALL BE PRESENT DURING ALL TESTING. ALL PIPE, FITTINGS, AND OTHER CONSTRUCTION MATERIALS SHALL BE INSPECTED FOR DEFECTS AND CONFORMANCE TO CITY OF GRAND PRAIRIE STANDARDS PRIOR TO PLACEMENT.

ALL TESTING RESULTS WILL BE SUBMITTED TO THE CONTRACTOR AND INSPECTOR WITHIN FIVE WORKING DAYS OF TESTING.

THE CITY SHALL MAKE FINAL DECISION AS TO THE VALIDITY OF ALL TESTING RESULTS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT MATERIALS TO BE TESTED ARE IN COMPLIANCE WITH ALL PLANS AND SPECIFICATIONS PRIOR TO TESTING. ALL MATERIALS FOUND NOT TO BE IN COMPLIANCE WITH THE PLANS AND SPECIFICATIONS BEFORE AND AFTER TESTING SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

ALL COSTS ASSOCIATED WITH THE RETESTING OF WORK THAT FAILS TO MEET THE SPECIFICATIONS REQUIRED IN THE CONTRACT DOCUMENTS SHALL BE BORNE BY THE CONTRACTOR THROUGH THE DEVELOPER/CITY. FOR CITY PROJECTS RETESTING COST SHALL BE WITHHELD FROM PAY REQUESTS SUBMITTED BY THE CONTRACTOR, THIS COST WILL BE BASED ON THE CITY'S COST WITH NO ADDITIONAL MARK-UP. A LETTER OF ACCEPTANCE WILL NOT BE ISSUED UNTIL ALL TESTING DEFICIENCIES ARE ADDRESSED AND ALL RELATED COST PAID.

MATERIALS TESTING POLICIES:

INSPECTOR AND TESTING FIRM MUST BE NOTIFIED 24 HOURS PRIOR TO ANY REQUIRED TESTING. FAILURE TO NOTIFY INSPECTOR AND TESTING FIRM MAY RESULT IN REJECTION OF THE WORK AND THE REMOVAL AND REPLACEMENT OF THE MATERIAL. INSPECTOR SHALL BE PRESENT DURING ALL TESTING. ALL PIPE, FITTINGS, AND OTHER CONSTRUCTION MATERIALS SHALL BE INSPECTED FOR DEFECTS AND CONFORMANCE TO CITY OF GRAND PRAIRIE STANDARDS PRIOR TO PLACEMENT.

THE CONTRACTOR MAKING ANY CONNECTION, EXTENSION OR MODIFICATION TO A PUBLIC UTILITY (WATER, WASTEWATER, OR STORM DRAIN), SHALL ALSO BE RESPONSIBLE FOR THE COMPACTION OF THE UTILITY TRENCH BACKFILL WITHIN THE EASEMENT OR RIGHT-OF-WAY. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE REPLACEMENT OF ANY PAVING THAT IS REMOVED TO MAKE ANY CONNECTION, EXTENSION OR MODIFICATION TO SAID PUBLIC UTILITY.

SECTION 1: SANITARY SEWER MAINS

- BACKFILL AND DENSITY TESTING:
  ALL TRENCHES SHALL BE BACKFILLED IN ACCORDANCE WITH SECTION 6 MECHANICAL TAMPING (ON THIS SHEET) MECHANICALLY COMPACTED WITH APPROVED VIBRATORY METHODS IN ACCORDANCE WITH NCTCOG ITEM 504.5.3.2.1 UNLESS OTHERWISE STATED ON THE PLANS OR IN THE SPECIFICATIONS.
- DENSITIES SHALL CONFORM TO SECTION 6 AND NCTCOG ITEM 504.5.3.2.1, UNLESS OTHERWISE STATED ON THE PLANS OR IN THE SPECIFICATIONS. PROCTOR SAMPLES SHALL BE TAKEN FOR ALL CLASSIFICATIONS OF SOIL ON SITE. ATTERBERG LIMITS SHALL BE DETERMINED ON ALL PROCTOR SAMPLES. DENSITIES SHALL BE IN ACCORDANCE WITH SECTION 6. NO "POTHOLING" OR "DIG-BACKS" WILL BE ALLOWED. DENSITIES SHALL BE TAKEN ON ALL SEWER SERVICES BOTH SIDES OF THE STREET WITHIN THE RIGHT-OF-WAY AND SHALL CONFORM TO SECTION 6 AND NCTCOG ITEM 504.5.3.2.1, UNLESS OTHERWISE STATED ON THE PLANS OR IN THE SPECIFICATIONS. BACKFILL ADJACENT TO ALL STRUCTURES SHALL BE COMPACTED MANUALLY AND DENSITY TESTED ON EVERY LIFT.
- SEWER LINE INSPECTION AND TESTING:
  ALL SEWER LINES SHALL BE TESTED WITH A MANDREL FOR 5% DEFLECTION (MAX.) IN ACCORDANCE WITH NCTCOG SPECIFICATION, ITEM 507.5.1.4.1. INSPECTOR OR OTHER CITY REPRESENTATIVE MUST BE PRESENT. ALL SEWER LINES SHALL BE TESTED BY A LOW PRESSURE AIR TEST ACCORDING TO THE NCTCOG SPECIFICATIONS, ITEM 507.5.1.3. INSPECTOR OR OTHER CITY REPRESENTATIVE MUST BE PRESENT. ALL SEWER LINES SHALL BE TELEVISED AND PLACED ON DVD (DIGITAL VIDEO DISK). A COPY OF THE DVD AND T.V. REPORT SHALL BE SUBMITTED TO THE CITY PRIOR TO ANY PAVING ACTIVITIES SO FAILURES MAY BE IDENTIFIED AND REPAIRED ACCORDINGLY (NCTCOG ITEM 507.5.2). ALL SERVICES SHALL NOT BE "PANNED" MANDRELED, AIR TESTED, NOR T.V. INSPECTED UNTIL ALL UTILITIES ARE COMPLETE IN PLACE AND BACKFILLED.
- MANHOLE CONSTRUCTION:
  A CONCRETE MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY PRIOR TO ANY PLACEMENT OF CONCRETE. SEE CITY OF GRAND PRAIRIE STANDARD CONSTRUCTION DETAILS FOR CONCRETE REQUIREMENTS. SULFATE RESISTANT CONCRETE SHALL BE USED FOR ALL MANHOLES.
  INSPECTOR SHALL BE NOTIFIED OF CONCRETE PLACEMENT 24 HOURS IN ADVANCE FOR STEEL AND FORM INSPECTION.
- ONE SET OF FOUR CYLINDERS (2-7 DAY, 2-28 DAY) FOR CAST-IN-PLACE MANHOLES SHALL BE MADE FOR EVERY DAY CONCRETE IS PLACED (ASTM C-31). AIR, SLUMP, AND TEMPERATURE TESTS SHALL BE TAKEN FOR EVERY SET OF CYLINDERS MADE. CONCRETE WITH A TEMPERATURE ABOVE 95° F WILL BE REJECTED. ADDITIONAL CYLINDERS AND OR TESTS MAY BE REQUESTED AT THE INSPECTOR OR ENGINEER'S DISCRETION. EXTERIOR FORMS SHALL NOT BE REMOVED FOR A MINIMUM OF 24 HOURS UNLESS APPROVED BY INSPECTOR OR ENGINEER.
- NO BACKFILLING AROUND MANHOLES SHALL BE PERMITTED UNTIL AT LEAST 72 HOURS AFTER FORM REMOVAL.
- ALL BACKFILL AROUND MANHOLES AND OTHER STRUCTURES SHALL BE MANUALLY PERFORMED AND SOIL DENSITIES SHALL BE TAKEN AT EVERY LIFT (6-8") IN SPIRAL FASHION.
- NO NATIVE/NATURAL STONE, RIVER ROCK/PEA GRAVEL SHALL BE ALLOWED.

SECTION 2: WATER MAINS

- BACKFILL AND DENSITY TESTING
- ALL TRENCHES SHALL BE BACKFILLED IN ACCORDANCE WITH SECTION 6 (ON THIS SHEET) AND MECHANICALLY COMPACTED WITH APPROVED VIBRATORY METHODS (NCTCOG ITEM 504.5.3.2.1). DENSITIES SHALL CONFORM TO SECTION 6 AND NCTCOG ITEM 504.5.3.2.1, UNLESS OTHERWISE STATED ON THE PLANS OR IN THE SPECIFICATIONS. PROCTOR SAMPLES SHALL BE TAKEN FOR ALL CLASSIFICATIONS OF SOIL ON SITE. ATTERBERG LIMITS SHALL BE DETERMINED ON ALL PROCTOR SAMPLES.
- DENSITIES SHALL BE IN ACCORDANCE WITH SECTION 6. NO "POTHOLING" WILL BE ALLOWED. DENSITIES SHALL BE TAKEN ON ALL LONG SERVICES UNDER PAVEMENT AND SHALL CONFORM TO SECTION 6 AND NCTCOG ITEM 504.5.3.2.1, UNLESS OTHERWISE STATED ON THE PLANS OR IN THE SPECIFICATIONS. BACKFILL ADJACENT TO HYDRANTS, METER VAULTS, AND OTHER WATER RELATED STRUCTURES SHALL BE COMPACTED MANUALLY AND DENSITY TESTED ON EVERY LIFT.
- WATER MAIN TESTING
- WATER MAINS SHALL BE PRESSURE TESTED ACCORDING TO THE NCTCOG SPEC. ITEM 506.5. WATER MAINS TO BE TESTED AT 150 PSI FOR 4 HOURS. WATER SAMPLES SHALL BE TAKEN BY CITY PERSONNEL. SAMPLE POINTS SHALL BE HOSE BIBS OR FAUCETS BROUGHT UP TO 12" ABOVE GRADE. SAMPLE LOCATIONS SHALL BE DETERMINED BY INSPECTOR. (SAMPLES MAY ONLY BE TAKEN MONDAY THROUGH THURSDAY FROM 8 AM TO 12 PM). INSPECTION OF WATER SERVICES AND MAIN LINE VALVES WILL BE DONE AT PRELIMINARY AND FINAL WALK THROUGH TO ENSURE SERVICES ARE "HOT" AND VALVES ARE OPERATIONAL AND FULLY OPEN. THIS WILL BE DONE BY OPERATING EACH SERVICE BRIEFLY TO VERIFY WATER FLOW AND OPERATING EACH VALVE TO A CLOSED POSITION AND BACK TO THE FULL OPEN POSITION. INSPECTION OF FIRE HYDRANTS WILL ALSO BE DONE AT FINAL WALK-THROUGH. THE HYDRANT WILL BE OPERATED WITH ALL CAPS CLOSED TO DEMONSTRATE NO FLANGE SEAL LEAKAGE. THEN THE HYDRANT WILL BE OPERATED WITH ONE CAP REMOVED TO DEMONSTRATE EASE OF OPERATION, WATER FLOW, AND WEEP-HOLE PERFORMANCE.
- NO NATIVE/NATURAL STONE, RIVER ROCK/PEA GRAVEL SHALL BE ALLOWED.

SECTION 3: STORM SEWER DRAINS

- BACKFILL AND DENSITY TESTING
- ALL TRENCHES SHALL BE BACKFILLED IN ACCORDANCE WITH SECTION 6 (ON THIS SHEET) AND MECHANICALLY COMPACTED WITH APPROVED VIBRATORY METHODS (NCTCOG ITEM 504.5.3.2.1) UNLESS OTHERWISE STATED ON THE PLANS OR IN THE SPECIFICATIONS. DENSITIES SHALL CONFORM TO SECTION 6 AND NCTCOG ITEM 504.5.3.2.1 UNLESS OTHERWISE STATED ON THE PLANS OR IN THE SPECIFICATIONS. PROCTOR SAMPLES SHALL BE TAKEN FOR ALL CLASSIFICATIONS OF SOIL ON SITE. ATTERBERG LIMITS SHALL BE DETERMINED ON ALL PROCTOR SAMPLES. DENSITIES SHALL BE IN ACCORDANCE WITH SECTION 6. NO "POTHOLING" WILL BE ALLOWED. DENSITIES SHALL BE TAKEN ON EVERY LATERAL UNDER PAVEMENT AND SHALL CONFORM TO SECTION 6 AND NCTCOG ITEM 504.5.3.2.1 UNLESS OTHERWISE STATED ON THE PLANS OR IN THE SPECIFICATIONS. BACKFILL ADJACENT TO INLETS, HEADWALLS, JUNCTION BOXES, AND OTHER STRUCTURES SHALL BE COMPACTED MANUALLY AND DENSITY TESTED ON EVERY LIFT.
- CONNECTIONS
  COLLARS, JUNCTIONS, WYES, AND DAMAGE REPAIRS WILL BE INSPECTED PRIOR TO CONCRETE PLACEMENT AND AGAIN PRIOR TO FINAL EMBEDMENT AND BACKFILL.
- STRUCTURE CONSTRUCTION
  NO PRE-CAST MANHOLES OR INLETS SHALL BE PERMISSIBLE FOR PUBLIC STORM DRAIN. A CONCRETE MIX DESIGN MUST BE SUBMITTED AND APPROVED BY GEOTECH PRIOR TO ANY PLACEMENT OF CONCRETE. SEE CITY OF GRAND PRAIRIE STANDARD CONSTRUCTION DETAILS FOR CONCRETE REQUIREMENTS. INSPECTOR SHALL BE NOTIFIED OF CONCRETE PLACEMENT 24 HOURS IN ADVANCE FOR STEEL AND FORM INSPECTION. ONE SET OF FOUR CYLINDERS (2-7 DAY, 2-28 DAY) SHALL BE MADE FOR EVERY DAY CONCRETE IS PLACED (ASTM C-31). AIR, SLUMP, AND TEMPERATURE TESTS SHALL BE TAKEN FOR EVERY SET OF CYLINDERS MADE. CONCRETE WITH A TEMPERATURE ABOVE 95° F WILL BE REJECTED. ADDITIONAL CYLINDERS AND OR TESTS MAY BE REQUESTED AT THE INSPECTOR OR ENGINEER'S DISCRETION. EXTERIOR FORMS SHALL NOT BE REMOVED FOR A MINIMUM OF 24 HOURS UNLESS APPROVED BY INSPECTOR OR ENGINEER.
- NO BACKFILLING ROUND STRUCTURES SHALL BE PERMITTED UNTIL AT LEAST 72 HOURS AFTER FORM REMOVAL.
- ALL STORM SEWER LINES SHALL BE TELEVISED AND PLACE ON DVD (DIGITAL VIDEO DISK). A COPY OF THE DVD AND STATIONED REPORT SHALL BE SUBMITTED TO THE CITY PRIOR TO ANY PAVING ACTIVITIES SO FAILURES MAY BE IDENTIFIED AND REPAIRED ACCORDINGLY (NCTCOG ITEM 507.5.2).
- NO NATIVE/NATURAL STONE, RIVER ROCK/PEA GRAVEL SHALL BE ALLOWED.

SECTION 4: STABILIZATION OF SUB-GRADE

- SOIL CLASSIFICATION AND SAMPLING "
- SAMPLES SHALL BE TAKEN FOR ALL CLASSIFICATIONS OF SOILS ON SITE. TESTING FOR SULFATE PRESENCE AND LIME SERIES TESTS SHALL BE CONDUCTED FOR ALL SAMPLES PRIOR TO ANY STABILIZATION. SPECIFIC RECOMMENDATION SHALL BE MADE BY GEOTECHNICAL ENGINEER FOR SUBGRADE PREPARATION AND THICKER PAVEMENT SECTION TO BE APPROVED BY THE CITY IF SULFATE CONTENT IS GREATER THAN 2,000 PPM (PARTS PER MILLION) . WHERE LIME IS RECOMMENDED, LIME CONTENT SHALL BE 6% MINIMUM. FOR SOILS WITH A P.I. OF LESS THAN 10, A MINIMUM OF 5% PORTLAND CEMENT SHALL BE USED. ADDITIONAL GEOTECHNICAL TESTING AND RECOMMENDATIONS MAY BE REQUIRED BY CITY AS FIELD CONDITIONS DICTATE. ATTERBERG LIMITS SHALL BE DETERMINED ON ALL PROCTOR SAMPLES.
- LIME STABILIZED SUB-GRADE SHALL HAVE AN INITIAL CURE TIME OF NOT LESS THAN 72 HOURS PRIOR TO RE-MIXING ACCORDING TO NCTCOG SPEC. ITEM 301.2.3.5.1.
- SUB-GRADE TESTING
  GRADATIONS FOR LIME TREATED SUB-GRADE SHALL BE TAKEN AT INTERVALS NOT EXCEEDING 300 FEET ALONG ROAD AND MUST PASS 100% THROUGH A 1 3/4" SIEVE AND 60% THROUGH A #4 SIEVE ACCORDING TO NCTCOG SPEC ITEM 301.2.3.5.1.
- GRADATIONS FOR PORTLAND CEMENT TREATED SUB-GRADE SHALL BE TAKEN PRIOR TO PLACEMENT OF CEMENT AND AT INTERVALS NOT EXCEEDING 100 FEET ALONG ROAD AND MUST PASS 100% THROUGH A 1" SIEVE AND 80% THROUGH A #4 SIEVE ACCORDING TO NCTCOG SPEC (ITEM 301.3.3.2).
- LIME SUB-GRADE SHALL BE TESTED IN ACCORDANCE WITH NCTCOG SPEC (ITEM 301.2.1.3). TESTS WILL BE PERFORMED BY EXCAVATING DEEPER THAN LIME TREATMENT AND ADMINISTERING A PHENOLPHTHALEIN INDICATOR.
- DENSITIES SHALL BE TAKEN ON SUB-GRADE IN ACCORDANCE WITH SECTION 6 MECHANICAL TAMPING AND IN ACCORDANCE WITH (NCTCOG ITEM 301.2.3.6) UNLESS OTHERWISE STATED ON THE PLANS OR IN THE SPECIFICATIONS.
- ALL SUB-GRADE SHALL BE VISUALLY 'PROOF ROLLED' AFTER IT IS TRIMMED AND PRIOR TO PLACEMENT OF STEEL.
- DENSITIES SHALL BE TAKEN WITHIN 72 HOURS OF CONCRETE PLACEMENT (NCTCOG ITEM 303.5.1). IF MORE THAN 72 HOURS ELAPSE, DENSITIES MUST BE RETAKEN UNLESS AN APPROVED EMULSION SEALANT IS USED (NCTCOG ITEM 302.3.5).
- LOCATIONS FOR DENSITIES, GRADATIONS, AND DEPTH CHECKS SHALL BE AT THE DISCRETION OF THE INSPECTOR AND SHALL BE REPRESENTATIVE OF THE ENTIRE CROSS SECTION OF THE SUB-GRADE.
- SUB-GRADE FAILURES SHALL BE DEFINED BY INSPECTOR OR ENGINEER. REPAIR METHOD WILL BE DISCUSSED WITH INSPECTOR OR ENGINEER AND APPROVED PRIOR TO BEGINNING REPAIR WORK.
- AT ALL TESTING LOCATION INTERVALS, MULTIPLE TESTS MAY BE REQUIRED ACROSS WIDTH OF RIGHT-OF-WAY.
- FOR EMULSION PLACEMENT OVER SUB-GRADE PLEASE REFER TO NCTCOG ITEM 302.2.3.7

SECTION 5: CONCRETE PAVEMENT (NCTCOG SECTION-303)

- MATERIALS AND BATCH DESIGN SUBMITTED FOR APPROVAL:
  THE CONTRACTOR SHALL SUBMIT FOR THE APPROVAL OF THE ENGINEER, PRIOR TO COMMENCING WORK, CONCRETE BATCH DESIGN MIXES TO BE USED IN ALL STRUCTURAL CONCRETE, SHOWING BY WEIGHT AND PROPORTION EACH OF CEMENT, FLYASH, ADMIXTURE, FINE AGGREGATE, AND COURSE AGGREGATE AND WATER TO OBTAIN A CONCRETE OF PROPER CONSISTENCY, DENSITY AND WORKABILITY. TESTING INFORMATION SHALL BE PROVIDED TO CONFIRM THE MIX DESIGN IS CAPABLE OF PRODUCING CONCRETE IN COMPLIANCE WITH THE PLANS AND SPECIFICATIONS. NO NATIVE/NATURAL STONE, RIVER ROCK/PEA GRAVEL SHALL BE ALLOWED.
- CONCRETE TESTING
  A CONCRETE MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY PRIOR TO ANY PLACEMENT OF CONCRETE. SEE CITY OF GRAND PRAIRIE STANDARD CONSTRUCTION DETAILS FOR CONCRETE REQUIREMENTS. INSPECTOR SHALL BE NOTIFIED OF CONCRETE PLACEMENT 24 HOURS IN ADVANCE FOR STEEL AND FORM INSPECTION. A MINIMUM OF FOUR TEST CYLINDERS SHALL BE OBTAINED PER ONE HUNDRED CUBIC YARD OF CONCRETE PRODUCTION; TESTS SHALL ALSO INCLUDE SLUMP, AIR CONTENTS AND TEMPERATURE OF CONCRETE MIXTURE; EACH MIX DESIGN OF CONCRETE PLACED EACH DAY SHALL ALSO BE TESTED. CONCRETE STRENGTH SHALL BE TESTED AT 7 DAYS (2 CYLINDERS) AND 28 DAYS (2 CYLINDERS). ADDITIONAL CYLINDERS AND OR TESTS MAY BE REQUESTED AT THE INSPECTOR OR ENGINEER'S DISCRETION.
- HOT WEATHER CONCRETE PLACEMENT
- CONCRETE WITH A TEMPERATURE OF 85° OR HIGHER WILL REQUIRE A RETARDING AGENT ADMIXTURE. THE MAXIMUM TEMPERATURE OF CONCRETE AT THE TIME OF PLACEMENT SHALL NOT EXCEED 95°. IT SHALL BE THE CONTRACTOR AND/OR HIS SUPPLIERS'S RESPONSIBILITY TO TAKE STEPS TO CONTROL THE TEMPERATURE OF CONCRETE. ALL CONCRETE THAT EXCEEDS THE TEMPERATURE LIMIT OF 95° WILL BE REJECTED.

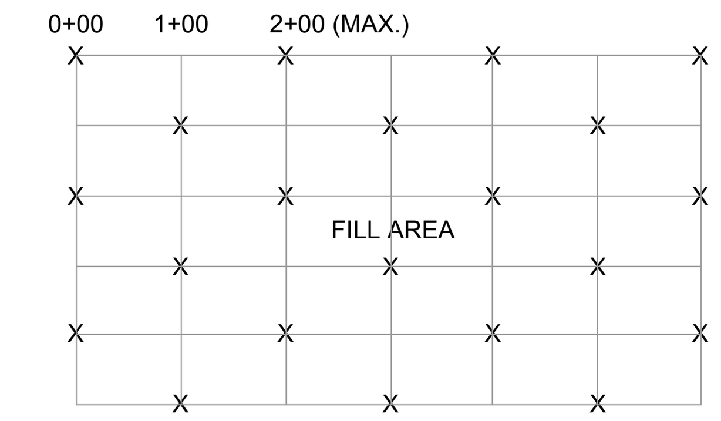
SECTION 6: CURE TIME, CORES, & FORM REMOVAL

- FORMS SHALL NOT BE REMOVED FROM PAVEMENT, SIDEWALKS, RAMPS, OR RETAINING WALLS FOR 24 HOURS MINIMUM, AND SHALL NOT BE BACKFILLED LESS THAN 72 HOURS AFTER CONCRETE PLACEMENT. PAVEMENT SHALL HAVE A MINIMUM CURE TIME OF 7 DAYS, BUT MAY BE OPENED TO TRAFFIC EARLIER AT THE DISCRETION OF THE INSPECTOR OR ENGINEER ONLY AFTER REVIEW OF COMPRESSIVE STRENGTH DATA. TEMPORARY PERPENDICULAR CROSSINGS MAY BE MADE AFTER 72 HOURS BY RAMPING SOIL OVER THE NEW PAVEMENT AT A DEPTH OF NOT LESS THAN 18" AND A WIDTH OF NOT LESS THAN 10'. PRIOR TO GROUT WIPING ANY CONCRETE, CONTRACTOR SHALL DEMONSTRATE METHOD OF SURFACE PREPARATION TO ENSURE ADHESION OF GROUT.

- ALL STREET PAVEMENT SHALL BE CORED TO VERIFY PROPER PAVEMENT THICKNESS AND STRENGTH PRIOR TO ACCEPTANCE. CORES FOR STRENGTH AND DEPTH SHALL BE 4" DIAMETER AND TAKEN AT INTERVALS NOT EXCEEDING 600 FEET; CORES FOR DEPTH ONLY SHALL BE 2" DIAMETER AND SHALL BE TAKEN AT INTERMEDIATE INTERVALS NOT EXCEEDING 300'. LOCATIONS WILL BE APPROVED BY THE CITY. MULTIPLE CORES MAY BE REQUIRED AT EACH INTERVAL TO REPRESENT ENTIRE CROSS SECTION. ALL CORES SHALL BE TAKEN AT 28 DAYS AND RESULTS SHALL BE CORRELATED WITH THE CYLINDER TEST RESULTS. EVALUATION OF CORES WILL BE IN ACCORDANCE WITH NCTCOG SPEC (ITEM 303.8.2). ALL REQUIRED PAVEMENT REPLACEMENT SHALL BE IN FULL PANEL INCREMENTS.

SECTION 7: MECHANICAL TAMPING OF BACKFILL

- ALL DITCH LINES AND BORE PITS SHALL BE MECHANICALLY TAMPED.
- BACKFILL, OTHER THAN SELECT FILL, MAY CONSIST OF ONSITE OR OFFSITE INORGANIC SOILS AND SHOULD BE PLACED IN LOOSE LIFTS 6"-8" IN THICKNESS (NOT TO EXCEED 12") AND SHOULD BE MECHANICALLY COMPACTED TO 95 PERCENT OF THE MAXIMUM DRY DENSITY
- AS DEFINED BY ASTM D-698 (STANDARD PROCTOR) PROCEDURES UNDER EXISTING AND PROPOSED PAVEMENT, AND TO 90 PERCENT STANDARD PROCTOR PROCEDURES ELSEWHERE. THE MOISTURE CONTENT OF THE FILL AT THE TIME OF COMPACTION SHALL BE BETWEEN MINUS 2% OF OPTIMUM TO FOUR PERCENTAGE POINTS ABOVE THE PROCTOR OPTIMUM VALUE.
- ALL BACKFILL MATERIAL TO BE SELECT NATIVE MATERIAL 6" DIAMETER CLODS AND SMALLER
- UNLESS DIRECTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS AND TO BE
- MECHANICALLY TAMPED AND DENSITY CONTROLLED AS DESCRIBED IN ITEM NO. B. ABOVE.
- WATER JETTING IS NOT PERMITTED.
- DENSITIES SHALL BE TAKEN EVERY ONE LIFT AT STAGGERED LOCATIONS NOT TO EXCEED 200 FEET INCREMENTS. OFFSET FIFTY FEET EVERY OTHER LIFT.
- DENSITIES MAY BE TAKEN AT TYPICAL LOCATIONS AS SHOWN BELOW; ALSO DENSITIES WILL BE TAKEN AT RANDOM LOCATIONS AND AT THE GEO-TECHNICIAN'S DISCRETION.



(LEGEND: X DENOTES DENSITIES.)

- SOLUBLE SULFATE TESTS SHALL BE PERFORMED EVERY THREE HUNDRED LINEAR FEET AFTER UTILITY CONSTRUCTION HAS BEEN COMPLETED AND FINAL PAVEMENT SUB-GRADES HAVE BEEN ACHIEVED. SULFATE RESISTANT CONCRETE SHALL BE UTILIZED FOR ALL AREAS WHERE HIGH CONCENTRATIONS OF SOLUBLE SULFATES ARE PRESENT; SULFATE CONTENTS EXCEEDING 2000 PARTS PER MILLION (PPM) ARE CONSIDERED HIGH. SULFATE TESTING METHOD SHALL COMPLY WITH TXDOT'S TEST METHOD TEX145E.

SECTION 8: BATCH PLANT REQUIREMENTS:

- THE CONTRACTOR SHALL COMPLY WITH THE CITY OF GRAND PRAIRIE REQUIREMENTS:
- PERMITS:
  A PERMIT FOR CONCRETE, ASPHALT OR ANY OTHER TYPE PLANT ESTABLISHED FOR MIXING MATERIALS FOR PAVING OR BUILDING MAY BE GRANTED FOR A TEMPORARY PERIOD OF TIME BY THE DIRECTOR OF PUBLIC WORKS. (ORD. NO. 4135, § 1, 4-7-87)
- APPLICATIONS:
  ANY PERSON, FIRM OR CORPORATION WHO DESIRES TO ESTABLISH A TEMPORARY BATCHING PLANT SHALL FILE AN APPLICATION FOR A PERMIT WITH THE CITY ENGINEER TOGETHER WITH THE MINIMUM REQUIREMENTS SET FORTH IN ARTICLE 4-USE CHARTS OF THE UDC (UNIFIED DEVELOPMENT CODE) AND CHAPTER 7 ART. IX SEC. 7-172 OF THE GRAND PRAIRIE CODE OF ORDINANCES AND SUCH OTHER INFORMATION THE CITY ENGINEER MAY REQUIRE.
- MINIMUM REQUIREMENTS:
  AS A MINIMUM, EACH APPLICATION SHALL CONTAIN THE NAME OF THE APPLICANT, A MAP SHOWING THE PROPOSED LOCATION OF THE PLANT, PROJECT TO WHICH THE PLANT RELATES, PERIOD OF TIME REQUESTED, AND A PERMIT EXEMPTION GRANTED BY THE TEXAS AIR CONTROL BOARD.
- TIME LIMIT:
  TEMPORARY BATCH PLANT PERMITS WILL BE ISSUED FOR A PROJECT BY THE CITY ENGINEER UPON REQUEST OF THE APPLICANT AND THE FILING OF AN APPLICATION AND FEE MEETING THE REQUIREMENTS OF THIS ARTICLE. THE DURATION OF SUCH PERMITS SHALL BE FOR A PERIOD OF SIX MONTHS OR UNTIL THE COMPLETION OF THE PROJECT, WHICHEVER OCCURS SOONER. IN THE EVENT THAT A PROJECT SHOULD TAKE LONGER THAN SIX MONTHS TO COMPLETE, THE APPLICANT MAY APPLY FOR AND RECEIVE AN EXTENSION ON HIS TEMPORARY BATCH PLANT PERMIT, SUCH EXTENSION TO LAST FOR A PERIOD OF SIX MONTHS OR UNTIL THE COMPLETION OF THE PROJECT, WHICHEVER OCCURS SOONER. AS MANY EXTENSIONS AS ARE NECESSARY MAY BE GRANTED TO THE APPLICANT TO COMPLETE THE PROJECT.
- NOTE:
  BATCH PLANTS SHALL ONLY BE USED TO PROVIDE CONCRETE FOR THE PERMITTED PROJECT; NO OTHER PROJECTS SHALL BE SUPPLIED FROM THIS BATCH PLANT WITHOUT A WRITTEN APPROVAL FROM THE CITY OF GRAND PRAIRIE.
- PUBLIC NOTICE:
  EACH PERMIT APPLICATION AND EXTENSION SHALL BE PUBLICLY ADVERTISED IN THE LOCAL NEWSPAPER TO PROVIDE A MINIMUM OF TEN DAYS FOR PUBLIC REVIEW AND COMMENT. THE CITY ENGINEER SHALL CONSIDER ALL PUBLIC COMMENT PRIOR TO APPROVING OR DENYING THE PERMIT APPLICATION.
- FEE
  THE FEE FOR PROCESSING AN APPLICATION FOR A TEMPORARY BATCH PLANT SHALL BE THREE HUNDRED FIFTY DOLLARS PAYABLE UPON FILING THE APPLICATION. IN THE EVENT THAT AN EXTENSION OF THE TEMPORARY BATCH PLANT PERMIT SHOULD BE SOUGHT, THE FEE FOR SUCH EXTENSION SHALL BE ONE HUNDRED DOLLARS. THE FEE FOR EACH ADDITIONAL EXTENSION OF THE TEMPORARY BATCH PLANT PERMIT AFTER THE ORIGINAL EXTENSION OF THE TEMPORARY BATCH PLANT PERMIT SHALL BE ONE HUNDRED DOLLARS. CONTRACTOR SHALL PAY THE FEES AND SUBMIT APPLICATION TO ALLOW FOR ADEQUATE TIME FOR PROCESSING AND ADVERTISEMENT PRIOR TO BEGINNING BATCH PLANT OPERATIONS. FEES MAY BE VERIFIED BY THE CITY ENGINEER PRIOR TO PERMIT SUBMITTAL.

SECTION 9: GENERAL:

- SOIL TESTING TECHNICIANS SHALL PROVIDE WRITTEN PROOF OF HAVING MINIMUM OF TWO YEARS OF RELATED FIELD EXPERIENCE.
- HOT-MIX ASPHALT CONCRETE PAVEMENT
- SPECIFICATION SHALL FOLLOW SECTION 302 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION N.C.T.C.O.G. AND CONFORM TO THE TXDOT STANDARD FOR HOT-MIX ASPHALTIC CONCRETE.
- THE ASPHALTIC MIXTURE SHALL BE TESTED FOR OVEN BURN OFF/GRADATION AND STABILITY.
- A RELATIVE DENSITY OF NOT LESS THAN 92% WILL BE REQUIRED AFTER FINAL COMPACTION OF THE IN-PLACE PAVEMENT SECTION. THE CONTRACTOR SHALL SCHEDULE THE CMT LABORATORY TO COME OUT IN THE FIELD AND ESTABLISH A ROLLING PATTERN. THE USE OF NUCLEAR FIELD DENSITY DETERMINATIONS SHALL NOT BE ACCEPTED AS THE BASIS FOR ACCEPTANCE WITH RESPECT TO DENSITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASSURING THAT THE COMPACTION OF THE ASPHALTIC CONCRETE IN PLACE WILL ATTAIN BETWEEN FIVE AND NINE PERCENT AIR VOIDS. THE CONTRACTORS' RESPONSIBILITY FOR THE REQUIRED COMPACTION INCLUDES THE SELECTION OF ROLLING EQUIPMENT AND SELECTION OF ROLLING PATTERNS TO ACHIEVE THE REQUIRED COMPACTION.
- HMAC MIX TEMPERATURE RANGE AT TIME OF PLACEMENT SHALL BE BETWEEN 260° AND 325°. THE ASPHALTIC MIXTURE SHALL NOT BE PLACED WHEN THE AIR TEMPERATURE IS BELOW 50°F BUT MAY BE PLACED WHEN THE AIR TEMPERATURE IS ABOVE 40°F AND RISING, THE TEMPERATURE BEING TAKEN IN THE SHADE AND AWAY FROM ARTIFICIAL HEAT.
- IN-PLACE COMPACTION CONTROL IS REQUIRED FOR ALL MIXTURES. ASPHALTIC CONCRETE SHOULD BE PLACED AND COMPACTED TO CONTAIN NOT MORE THAN NINE PERCENT NOR LESS THAN FIVE PERCENT AIR VOID UNLESS OTHERWISE INDICATED. THE PERCENT AIR VOIDS WILL BE CALIBRATED USING THE MAXIMUM THEORETICAL SPECIFIC GRAVITY OF THE MIXTURE DETERMINED ACCORDING TO TXDOT TEST METHOD TEX-227-F ROADWAY SPECIMEN, WHICH SHALL EITHER BE CORES OR SECTIONS OF PAVEMENT, WILL BE TESTED ACCORDING TO TXDOT TEST METHOD TEX-207F. THE SAME SPECIMEN SHALL BE USED TO DETERMINING BOTH THE THEORETICAL DENSITY AND FIELD DENSITY.
- PRIME COAT WILL FOLLOW N.C.T.C.O.G. SPECIFICATIONS 302.7 AND 302.9.6.1.
- TACK COAT WILL FOLLOW N.C.T.C.O.G. SPECIFICATION 302.9.6.2.
- HMAC MIX DESIGNS SHALL FOLLOW N.C.T.C.O.G. SPECIFICATION 302.9.3 AND THE GRADING TABLES INCLUDED IN THIS SECTION. THESE MIXTURES WILL BE IN ACCORDANCE WITH TXDOT TEST METHOD TEX-204-F, DESIGN OF BITUMINOUS MIXTURES.
- FLOWABLE FILL SPECIFICATIONS
- COMPOSITION OF FLOWABLE FILL SHALL INCLUDE NATIVE SAND OR A BLEND OF NATIVE SAND/MANUFACTURED SAND, CEMENT AND FLY ASH WHICH WILL PRODUCE A MATERIAL WITH UNCONFINED COMPRESSIVE STRENGTH OF 250 TO 450 PSI AFTER TWENTY-EIGHT DAYS.
- FLOWABLE FILL MUST BE MIXED AT A CONCRETE BATCH PLANT OR A MOBILE TRANSIT AND SHALL HAVE A SLUMP OF FIVE TO EIGHT INCHES AND AN AIR CONTENT OF SIX TO TWENTY PERCENT. THE MIXTURE MUST BE ALLOWED TO SET PRIOR TO THE PLACEMENT OF ANY OVERLYING MATERIAL.
- THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A MIX DESIGN TO BE USED TEN DAYS PRIOR TO THE START OF THE BACKFILL OPERATION. CONTRACTOR SHALL ALSO SUPPLY THE PUBLIC WORKS INSPECTOR A COPY OF THE BATCH PLANT DELIVERY TICKET FOR EACH DELIVERED TRUCKLOAD.
- THE CITY MAY EXERCISE THE OPTION OF TESTING THE MATERIAL AT RANDOM. IT SHALL BE THE OWNER/DEVELOPER'S RESPONSIBILITY FOR ANY COST ASSOCIATED WITH TESTING OF THE MATERIAL.

- TESTING OF MANHOLES:
  ALL MANHOLES SHALL BE VACUUM TESTED. MANHOLES SHALL BE TESTED IN THE PRESENCE OF THE CITY'S REPRESENTATIVE. THE VACUUM TEST SHALL CONSIST OF APPLYING A VACUUM TO THE MANHOLE. EACH MANHOLE SHALL BE TESTED AFTER THE INSTALLATION HAS BEEN COMPLETED. ALL PIPES ENTERING THE MANHOLE SHALL BE PLUGGED, TAKING CARE TO SECURELY BRACE THE PLUG FROM BEING DRAWN INTO THE MANHOLE. THE TEST HEAD SHALL BE PLACED AT THE INSIDE OF THE MANHOLE COVER FRAME, THE SEAL INFLATED AND THE MANHOLE SHALL BE TESTED IN ACCORDANCE WITH THE FOLLOWING A VACUUM OF 10 INCHES OF MERCURY SHALL BE DRAWN AND THE VACUUM PUMP SHUT OFF. WITH THE VALVES CLOSED, THE TIME SHALL BE MEASURED FOR THE VACUUM TO DROP TO 9 INCHES OF MERCURY. THE MANHOLE SHALL PASS IF THE TIME IS GREATER THAN 60 SECONDS FOR 48" DIAMETER, 75 SECONDS FOR 60" DIAMETER AND 90 SECONDS FOR 72" DIAMETER MANHOLES. FOR MANHOLES DEEPER THAN 20 FEET, THE TEST TIMES SHALL DECREASE BY ONE SECOND PER FOOT OF ADDITIONAL MANHOLE DEPTH.

CERTIFICATION:
THIS CITY OF GRAND PRAIRIE STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM THE CITY OF GRAND PRAIRIE.

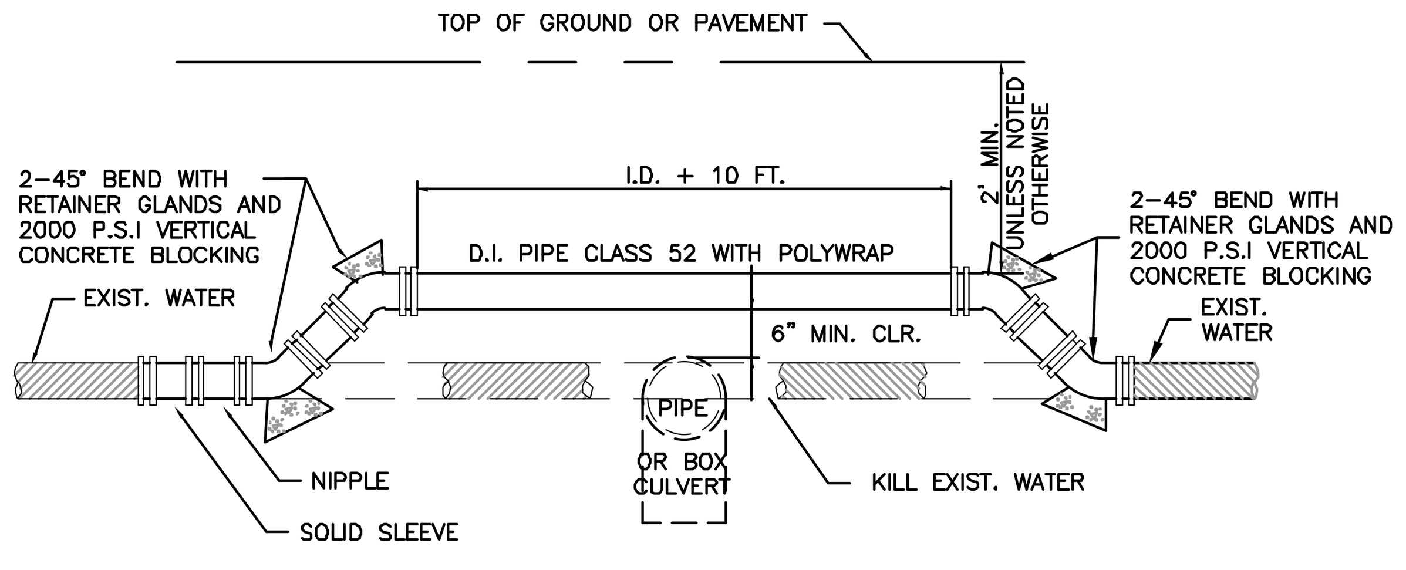
STATE OF TEXAS
MATT MOORE
95813
LICENSED
PROFESSIONAL ENGINEER
03/28/2016

C-11

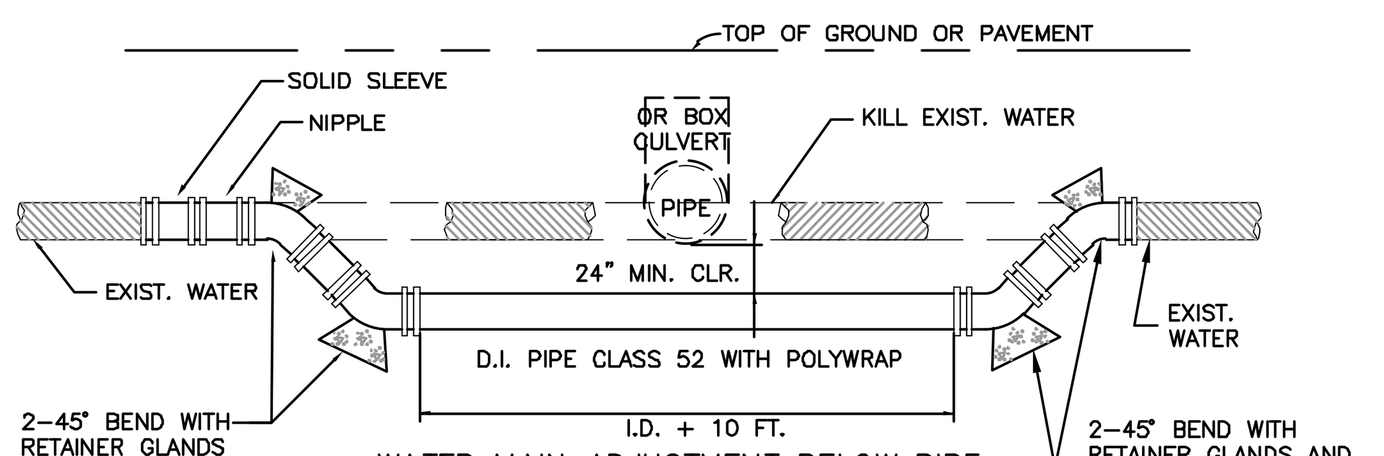
STANDARD GENERAL
TESTING REQUIREMENTS FOR
WATER, WASTEWATER,
STORM SEWER AND PAVEMENT
CONSTRUCTION

GRAND PRAIRIE
TEXAS
ENGINEERING

DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
G.F.	J.P.	G.F.	NOV. 2015	N.T.S.		

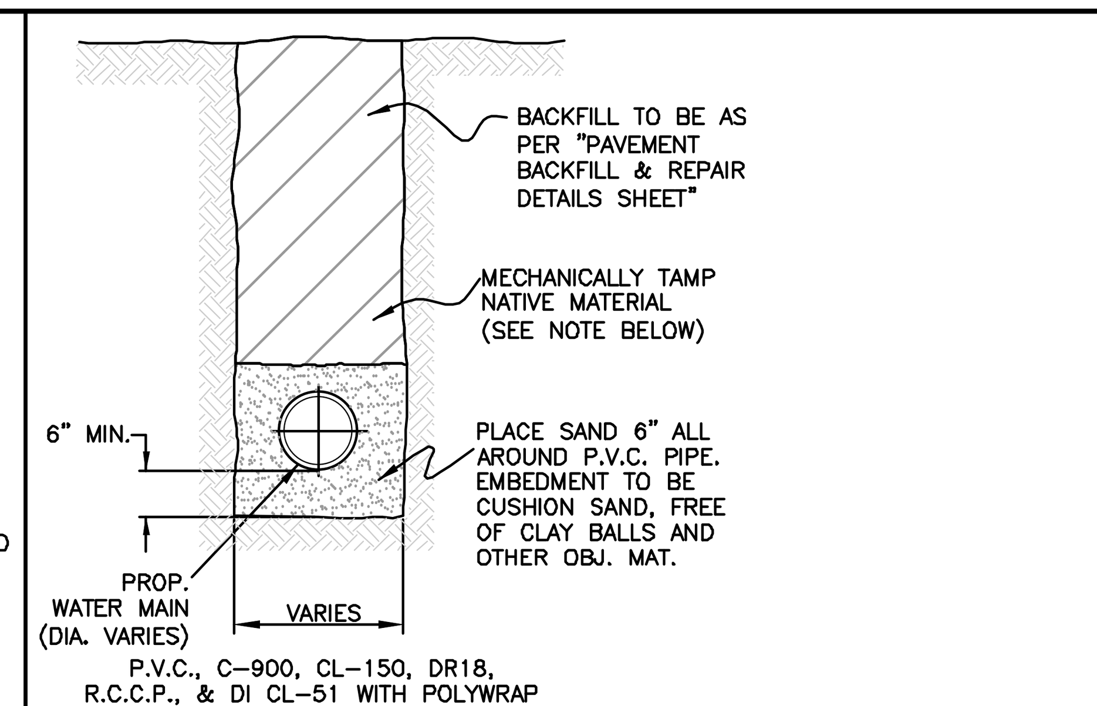


WATER MAIN ADJUSTMENT ABOVE PIPE



WATER MAIN ADJUSTMENT BELOW PIPE

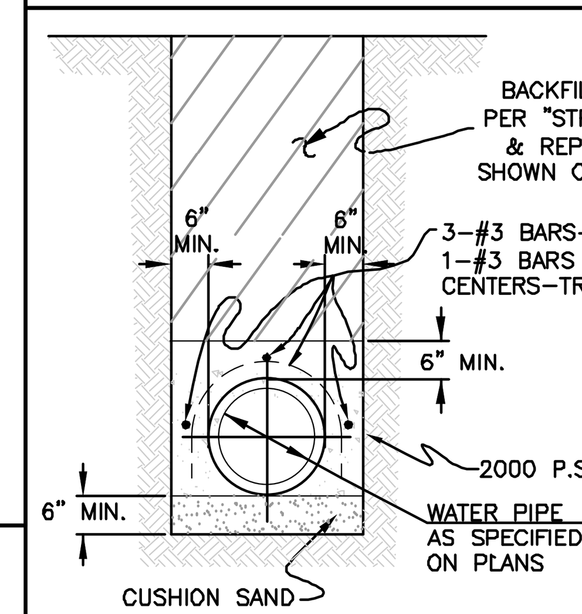
WATER MAIN ADJUSTMENT DETAILS



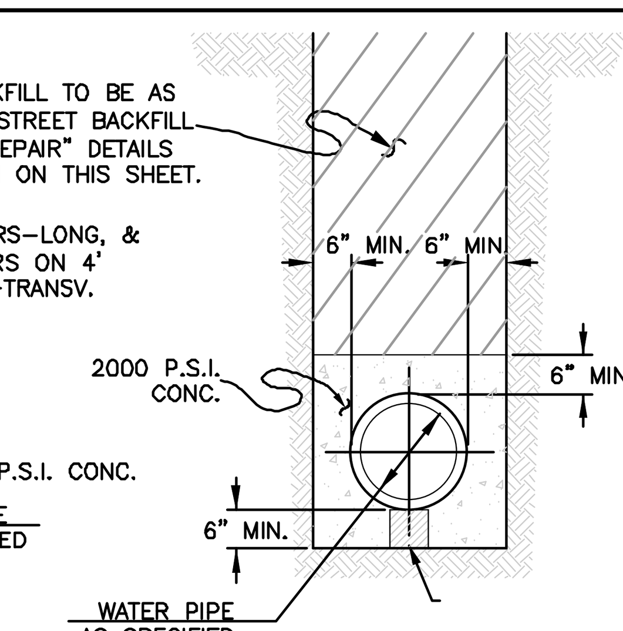
PIPE EMBEDMENT DETAIL (12" DIA. AND SMALLER)
N.T.S.

* MECHANICALLY TAMP NATIVE MATERIAL (6"ø CLODS OR SMALLER IN 6"-8" LIFTS) TO 95% OF THE MAXIMUM DRY DENSITY DETERMINED BY THE STD. PROCTOR TEST, ASTM D698 WITH MOISTURE CONTENT OF THE FILL AT THE TIME OF COMPACTION TO BE NEAR OPTIMUM OR 4% ABOVE PROCTOR OPTIMUM VALUE.

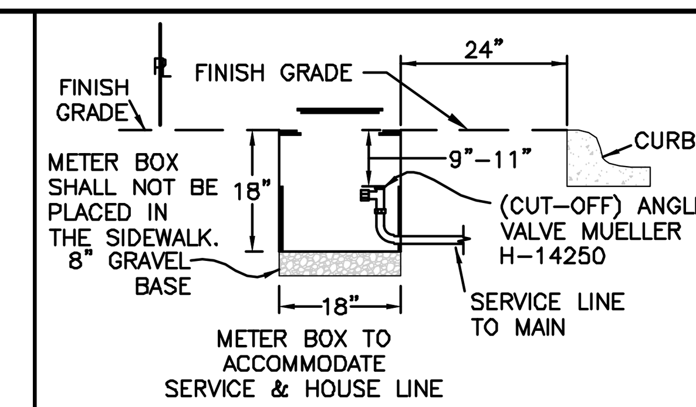
SEE PAVEMENT & BACKFILL TRENCH REPAIRS DETAIL SHEET



CAP DETAIL
N.T.S.



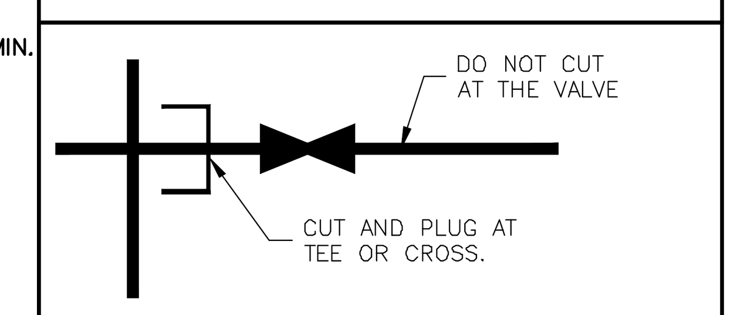
ENCASEMENT DETAIL
N.T.S.



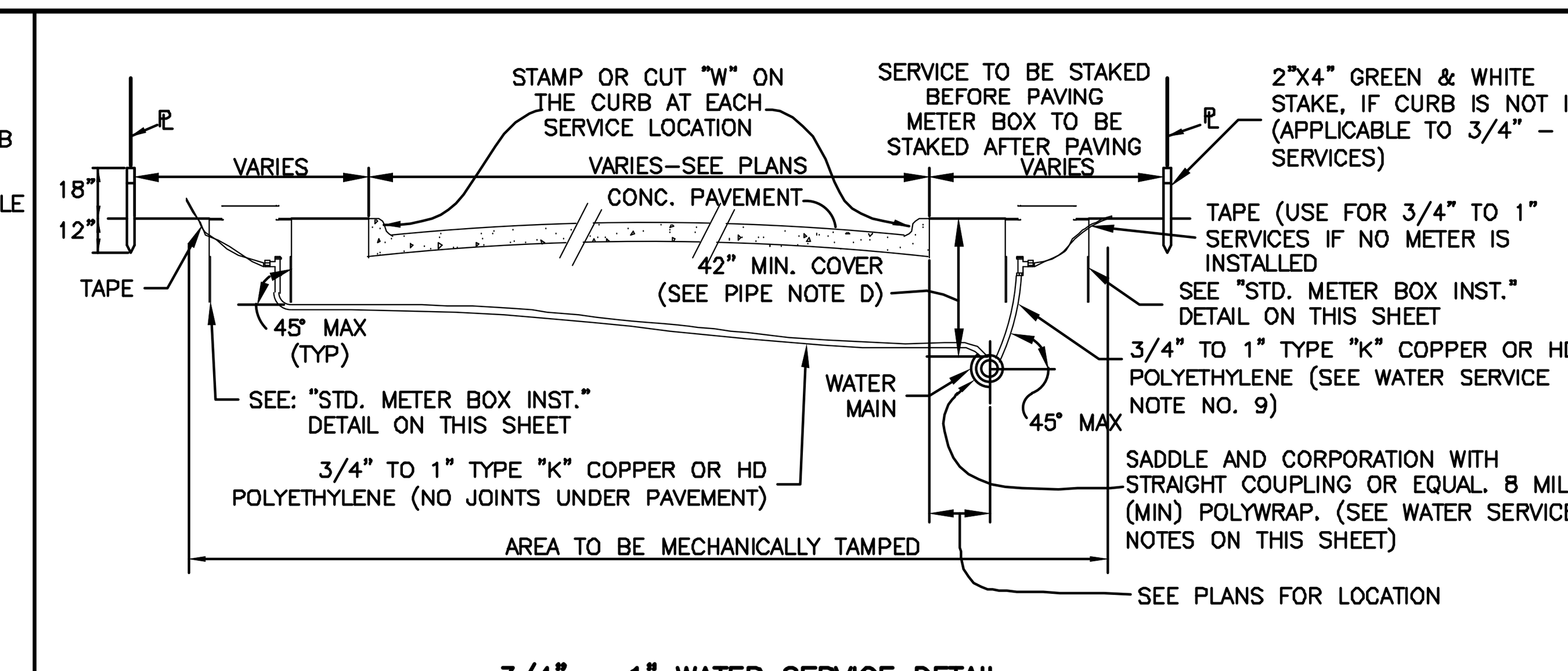
STD. METER BOX INST.
N.T.S.

METER BOX SPECS:
FOR 5/8" TO 1" METERS, USE 18"X18" PLASTIC METER BOX WITH CAST IRON RING AND PLASTIC LID. SEE NOTE 16 IN WATER SERVICE NOTES FOR SPECS. FOR 1-1/2" & 2" METERS USE DFW 2818-IPLCIR-ITRON BOX AND LID OR APPROVED EQUAL.

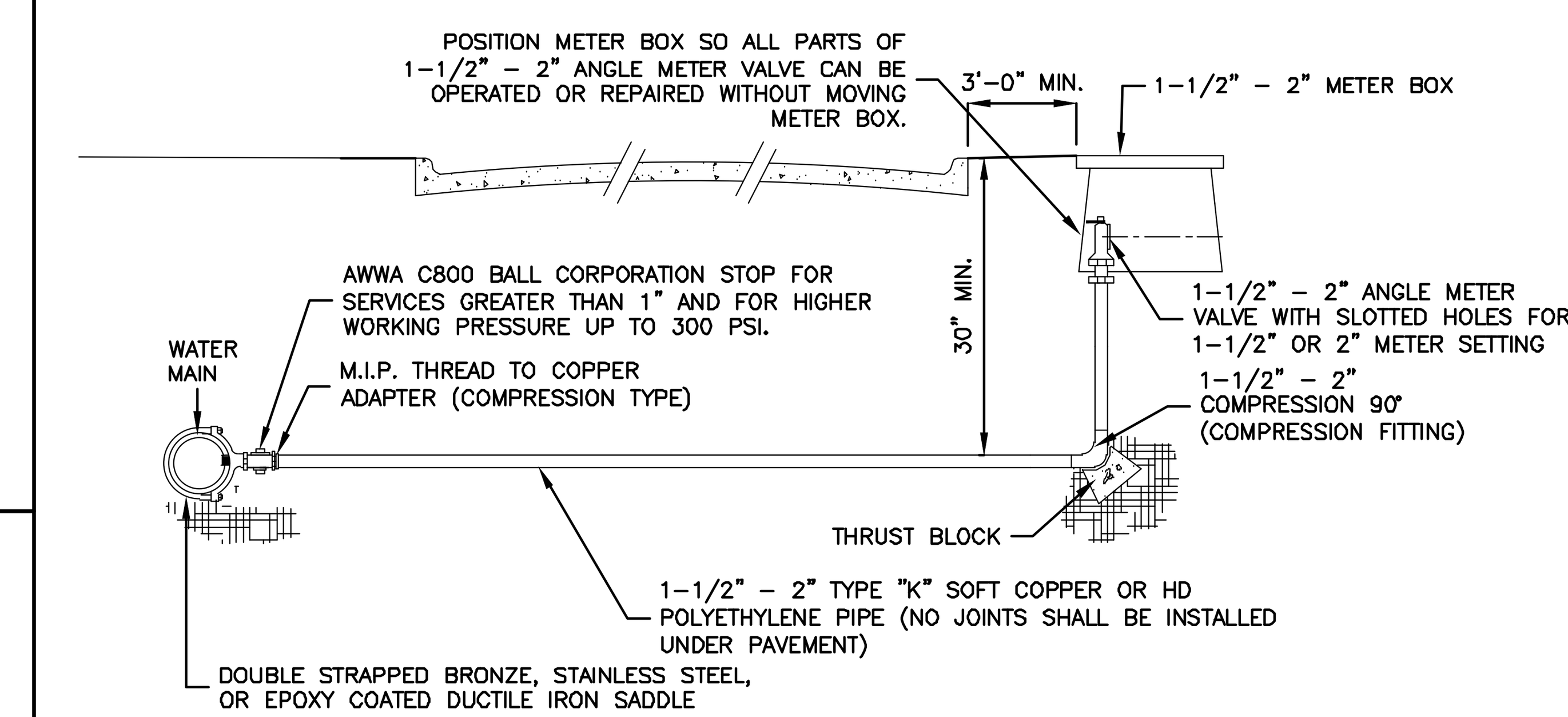
LAY LENGTHS FOR METERS	
METER SIZE	LAYING LENGTH
5/8" X 3/4"	7-1/2"
1"	11"
1-1/2"	1' 1-1/4"
2"	1' 5-1/4"



CUT AND PLUG FOR ABANDONED WATER LINES AND VALVES



3/4" - 1" WATER SERVICE DETAIL
N.T.S.

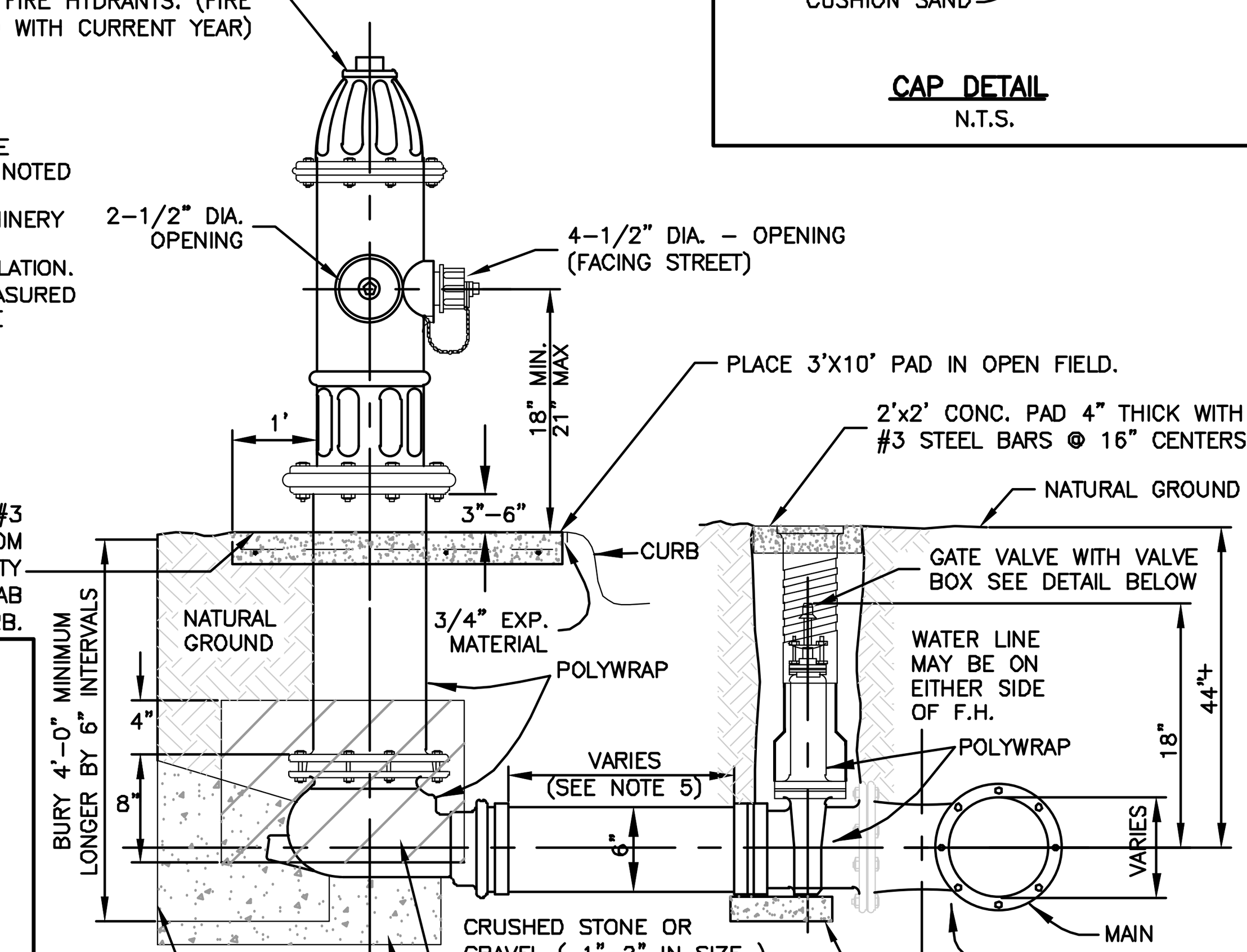


1-1/2"-2" WATER SERVICE DETAIL
N.T.S.

MUELLER SUPER CENTURION, CLOW MEDALLION AMERICAN-DARLING, WATEROUS PACER, AMERICAN FLOW CONTROL, M&H AND EJ FIRE HYDRANTS. (FIRE HYDRANTS SHALL BE STAMPED WITH CURRENT YEAR)

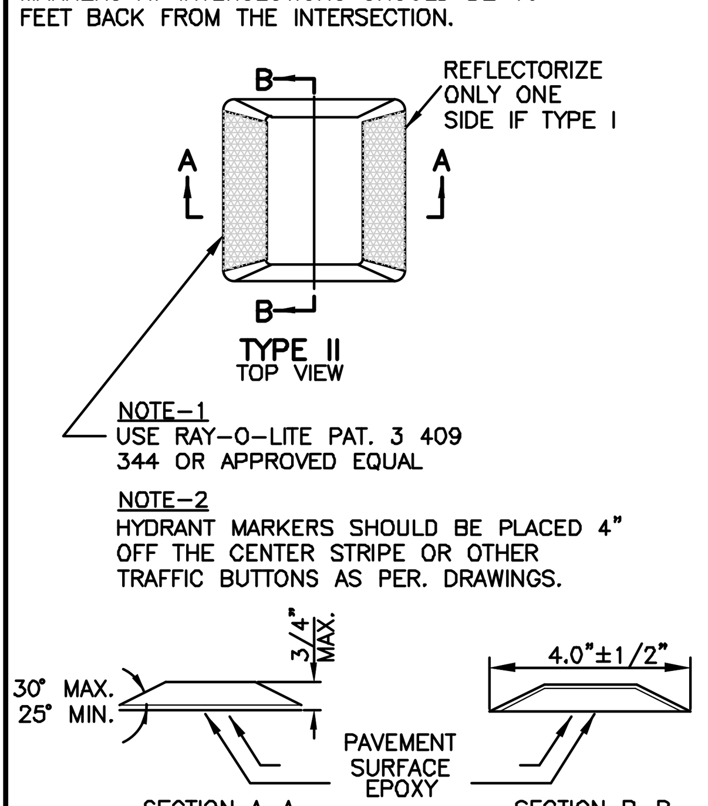
FIRE HYDRANT NOTE:
1. FIRE HYDRANTS SHALL BE LOCATED 3'-6" FROM THE CENTER OF THE FIRE HYDRANT TO BACK OF CURB IN RESIDENTIAL & 4'-6" FROM THE CENTER OF THE FIRE HYDRANT TO BACK OF CURB IN INDUSTRIAL, OR AS NOTED ON PLANS.
2. PUBLIC FIRE HYDRANTS SHALL BE COATED WITH MACHINERY RED QUICK DRY ENAMEL F77-RH.
3. ALL FIRE HYDRANTS SHALL BE PAINTED AFTER INSTALLATION.
4. FIRE HYDRANT LEAD SHALL BE 150' MAXIMUM AS MEASURED FROM THE MAIN UNLESS APPROVED BY THE CITY FIRE MARSHAL.
5. PLACE 3'X10' PAD IN OPEN FIELD.

CONCRETE PAD SHALL BE 4" THICK BY 3' WIDE WITH #3 STEEL BARS @ 12" CENTERS AROUND F.H. TO GO FROM BACK OF CURB TO 1' BEHIND F.H. REINFORCED TO CITY SPECS. MINIMUM 2" DISTANCE BETWEEN CONCRETE SLAB AND FLANGE BOLTS @ 1/4" TO 12" TO BACK OF CURB.



STANDARD FIRE HYDRANT DETAIL
N.T.S.

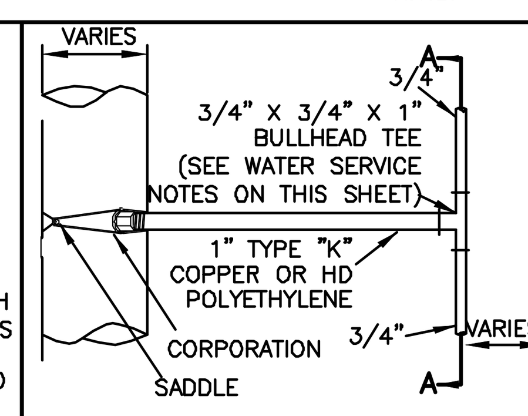
NOTE 3
FIRE HYDRANT LOCATION WILL BE MARKED BY PLACING A TYPE II PAVEMENT MARKER REFLECTORIZED BLUE 4" OFF OF THE TRAFFIC LANE BUTTONS. THE MARKER WILL BE IN THE LANE NEAREST TO THE FIRE HYDRANT. ALL MARKERS AT INTERSECTIONS SHOULD BE 10 FEET BACK FROM THE INTERSECTION.



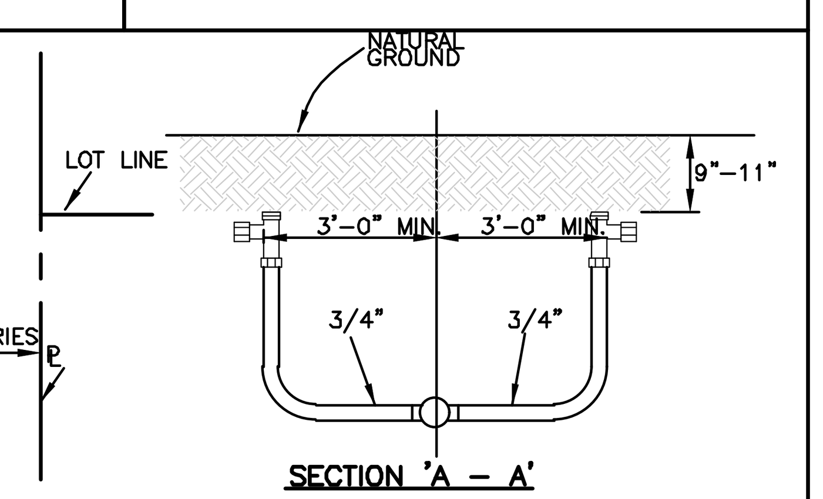
NOTE-1
USE RAY-O-LITE PAT. 3 409 344 OR APPROVED EQUAL

NOTE-2
HYDRANT MARKERS SHOULD BE PLACED 4" OFF THE CENTER STRIPE OR OTHER TRAFFIC BUTTONS AS PER. DRAWINGS.

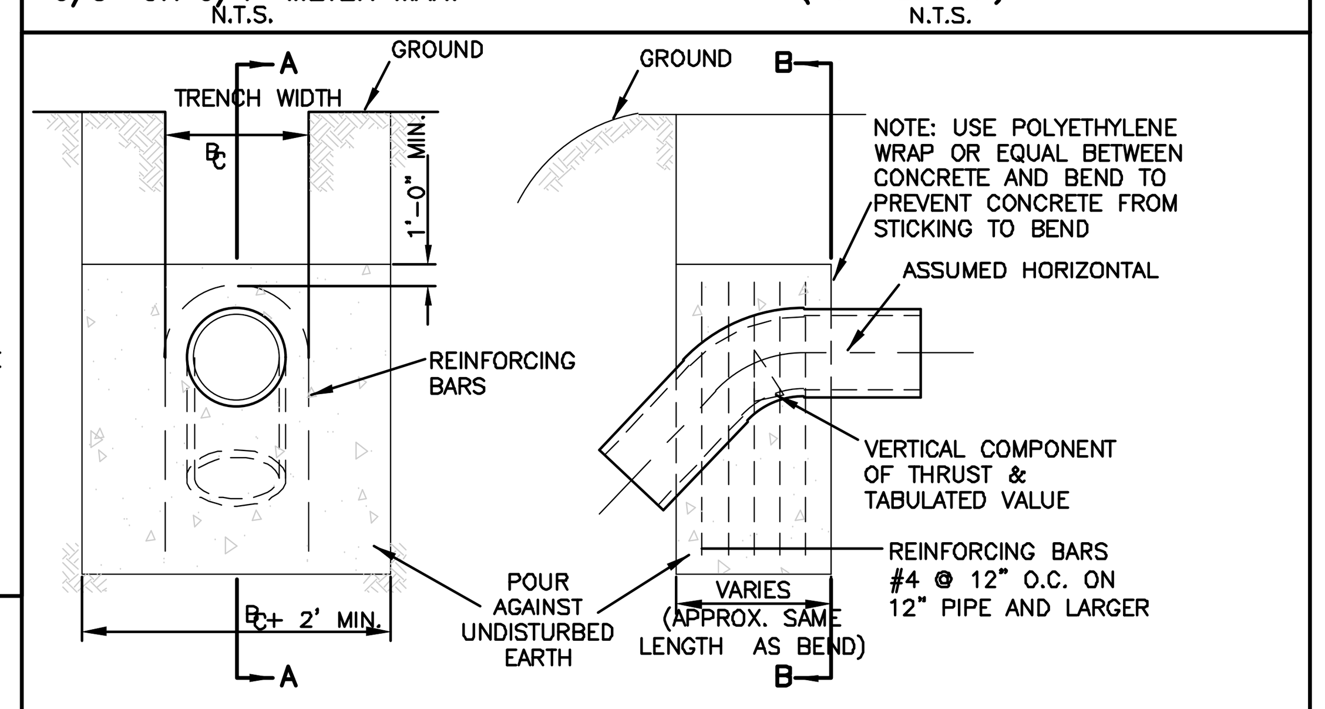
PAVEMENT MARKERS (REFLECTORIZED) TYPE II



DETAIL OF 1" SERVICE WITH BULLHEAD TEE.
5/8" OR 3/4" METER MAX.
N.T.S.



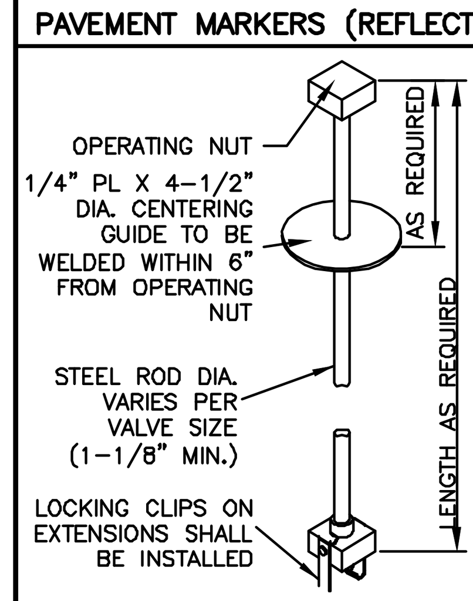
SECTION 'A - A'
(ROTATED 90°)
N.T.S.



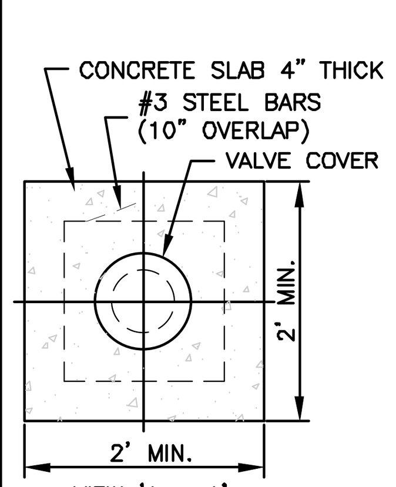
Δ	11.25°		22.50°		30°		45°		67.50°		90°		Δ
I.D. (IN)	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	I.D. (IN)
4,6,8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5	4,6,8
10,12	2.2	1.1	4.3	2.2	5.7	2.8	8.0	4.0	10.5	5.2	11.3	5.7	10,12
16,18	5.0	2.5	9.7	4.9	12.7	6.4	18.0	9.0	23.5	11.8	25.5	12.7	16,18
20	6.1	3.1	12.0	6.0	15.7	7.9	22.2	11.1	29.2	14.5	31.4	15.7	20
24	8.2	4.4	17.3	8.7	22.6	11.3	32.0	16.0	41.8	20.9	45.2	22.6	24
30	10.5	5.2	20.3	10.1	26.5	13.3	37.5	18.8	49.0	24.5	53.1	26.5	30
36	14.9	7.5	29.2	14.6	38.2	19.1	54.0	27.0	70.5	35.3	76.4	38.2	36
42	20.3	10.1	39.8	19.9	52.0	26.0	73.5	36.7	96.0	48.0	104.0	52.0	42
48	26.5	13.2	51.9	26.0	67.9	33.9	96.0	48.0	126.0	62.7	136.0	67.9	48
54	33.5	16.8	65.7	32.9	85.9	42.9	122.0	60.7	159.0	79.4	172.0	85.9	54
60	41.4	20.7	81.2	40.6	106.0	53.0	150.0	75.0	196.0	98.0	212.0	106.0	60
66	50.1	25.0	98.2	49.1	128.0	64.2	182.0	90.7	237.0	119.0	257.0	128.0	66
72	59.6	29.8	117.0	58.4	153.0	76.3	216.0	108.0	282.0	141.0	305.0	153.0	72
78	69.9	35.0	137.0	68.6	179.0	90.0	254.0	127.0	331.0	166.0	358.0	179.0	78
84	81.1	40.5	159.0	79.5	208.0	104.0	294.0	147.0	384.0	192.0	416.0	208.0	84
90	93.1	46.5	183.0	91.3	239.0	119.0	337.0	169.0	441.0	221.0	477.0	239.0	90
96	106.0	53.0	208.0	104.0	272.0	136.0	384.0	192.0	502.0	251.0	543.0	272.0	96

VERTICAL THRUST BLOCK NOTES:
1. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 P.S.I. FOR 24" I.D. PIPE AND SMALLER AND 150 P.S.I. ON 30" I.D. AND LARGER.
2. VOLUMES OF VERTICAL BEND THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THRUST ON THE VERTICAL BEND.
3. WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.
4. CONCRETE FOR BLOCKING SHALL BE 2000 P.S.I. CONCRETE.
5. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.

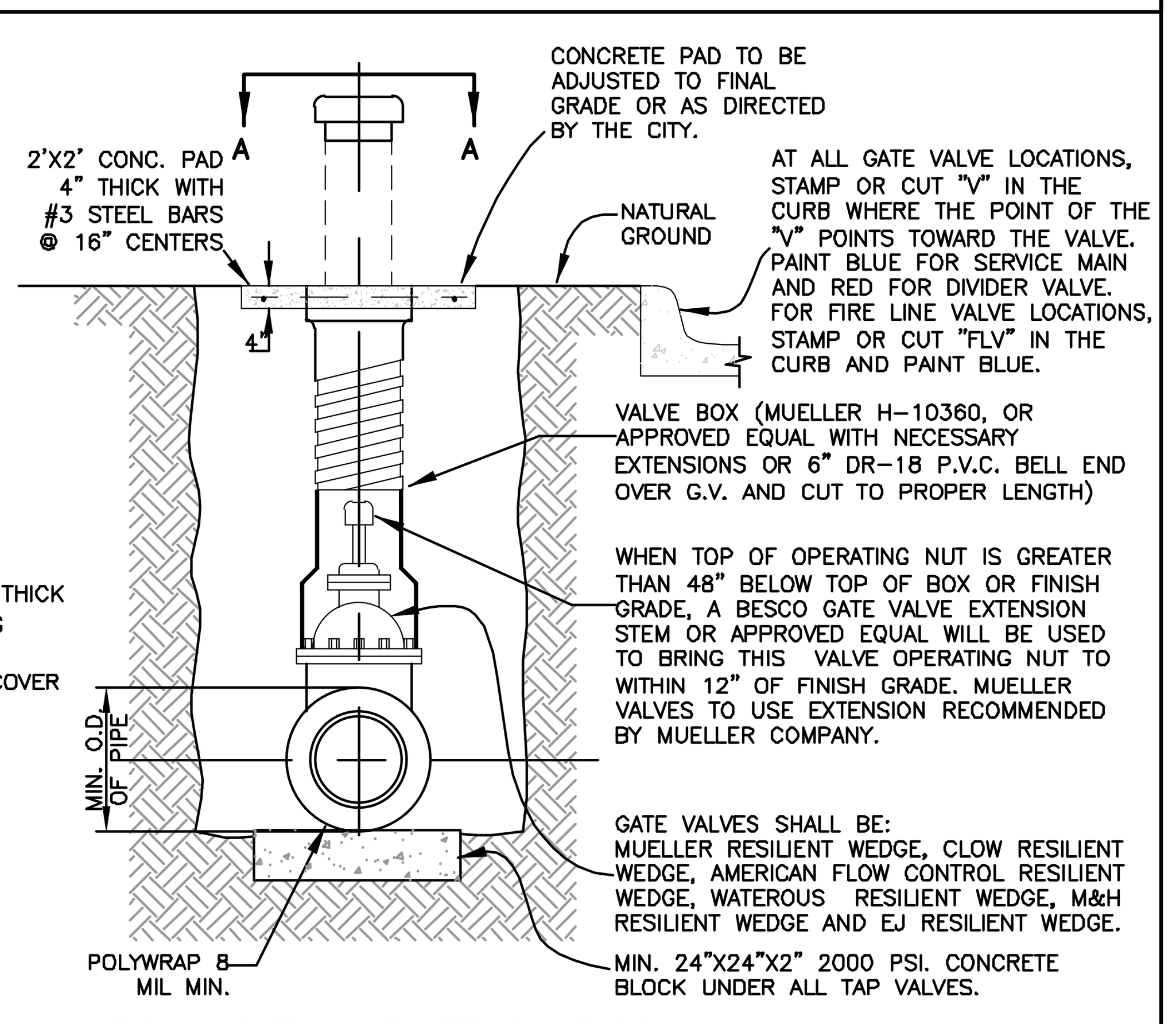
DIMENSIONS OF CONCRETE FOR VERTICAL THRUST BLOCKS AT FITTINGS



GATE VALVE EXTENSION STEM
N.T.S.



VIEW 'A - A'
N.T.S.



AT ALL GATE VALVE LOCATIONS, STAMP OR CUT "V" IN THE CURB WHERE THE POINT OF THE "V" POINTS TOWARD THE VALVE. PAINT BLUE FOR SERVICE MAIN AND RED FOR DIVIDER VALVE. FOR FIRE LINE VALVE LOCATIONS, STAMP OR CUT "FLV" IN THE CURB AND PAINT BLUE.

VALVE BOX (MUELLER H-10360, OR APPROVED EQUAL WITH NECESSARY EXTENSIONS OR 6" DR-18 P.V.C. BELL END OVER G.V. AND CUT TO PROPER LENGTH)

WHEN TOP OF OPERATING NUT IS GREATER THAN 48" BELOW TOP OF BOX OR FINISH GRADE, A BESCO GATE VALVE EXTENSION STEM OR APPROVED EQUAL WILL BE USED TO BRING THIS VALVE OPERATING NUT TO WITHIN 12" OF FINISH GRADE. MUELLER VALVES TO USE EXTENSION RECOMMENDED BY MUELLER COMPANY.

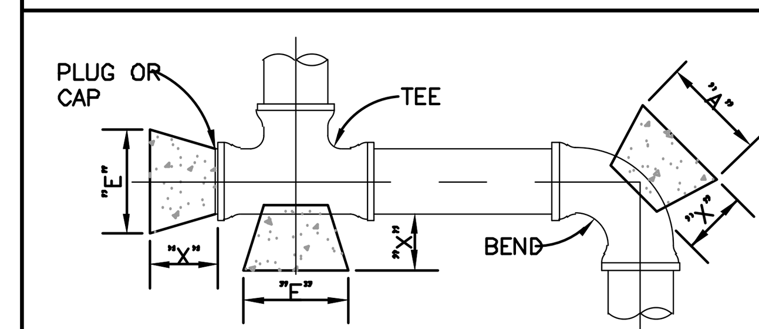
GATE VALVES SHALL BE:
MUELLER RESILIENT WEDGE, CLOW RESILIENT WEDGE, AMERICAN FLOW CONTROL RESILIENT WEDGE, WATEROUS RESILIENT WEDGE, M&H RESILIENT WEDGE AND EJ RESILIENT WEDGE.

MIN. 24"X24"X2" 2000 PSI. CONCRETE BLOCK UNDER ALL TAP VALVES.

TYPICAL GATE VALVE SETTING AND BOX
N.T.S.

WATER SERVICE NOTES:

1. ALL PROPERTY CORNERS SHALL BE STAKED WITH IRON RODS PRIOR TO THE INSTALLATION OF ANY WATER SERVICES. THE LOCATIONS OF THE SERVICE SHALL BE STAKED ACCORDING TO THE PLANS.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FURNISH AND INSTALL THE CORPORATION, WATER SERVICE PIPE, CUT-OFF ANGLE VALVE, THE CONNECTOR PIPE, AND METER BOX, AS PER THE DETAILS ON THIS SHEET.
3. DIRECT TAPS ARE NOT ALLOWED, SADDLES SHALL BE USED.
4. CUTTER FOR TAPS TO BE OF THE DOUBLE SLOTTED TYPE.
5. TAPS SHALL HAVE BRASS OR STAINLESS STEEL SADDLES WITH A MINIMUM WIDTH OF 2" TO PROVIDE FULL SUPPORT AND SHALL BE CLOW VEGA 3407 & 3408, ROMAC 101-N & 102-N OR APPROVED EQUAL.
6. ALL SERVICE TAPS LARGER THAN 2" SHALL BE MADE USING TAPPING TEES WITH RESILIENT WEDGE GATE VALVE IN BOX OR APPROVED EQUAL.
7. 3/4" TO 2" TAPS SHALL BE A MINIMUM OF 1' APART WITH TAPS NO CLOSER THAN 1' FROM THE END OF THE PIPE.
8. HOUSE SERVICES ON COMMON LOT LINES SHALL BE 1" WITH BULLHEAD. ALL OTHERS SHALL BE 3/4".
9. 3/4" THROUGH 2" WATER SERVICES SHALL BE:
   A. TYPE "K" SOFT DRAWN COPPER.
   B. BLUE HD POLYETHYLENE TUBING PER AWWA C901 AND C904 PE SERVICE LINE WITH COMPRESSION COUPLING NUT AND INTERNAL STIFFENER DESIGNED FOR PE CONNECTION (ASTM F1948).
10. CONTRACTOR MAY USE EITHER FLARED OR COMPRESSION BRASS FITTINGS WITH RESTRAINED UNIONS. (USE FORD OR MUELLER "Q" COUPLING OR APPROVED EQUAL)
11. NO SPLICES OF WATER SERVICES SHALL BE PERMITTED UNDER PAVEMENT UNLESS APPROVED BY THE CITY ENGINEER.
12. CONTRACTOR SHALL USE A 3 PART UNION COPPER TO COPPER, MUELLER H-15405 COMPRESSION FITTING WITH RESTRAINED UNION, OR EQUAL WHERE SPLICES ARE PERMITTED. ADDITIONALLY, STIFFENERS WILL BE REQUIRED FOR HD POLYETHYLENE SERVICES.
13. USE 3/4" OR 1" CORPORATION, MUELLER H-15008 COMPRESSION CORPORATION, OR EQUAL.
14. USE 3/4" X 3/4" X 1" BULLHEAD TEE MUELLER H-15381 COMPRESSION FITTING, OR EQUAL.
15. METER BOX SHALL BE SET AT THE BACK OF CURB, OUTSIDE OF DRIVEWAYS AND PAVED AREAS.
16. ALL METER BOXES SHALL BE AS SPECIFIED AS BELOW: 5/8" TO 1" METERS (NON-TRAFFIC AREAS): BASS & HAYES P34P18D1S WITH 3LIDP-2 LID 5/8" TO 1" METERS (DIRECT TRAFFIC AREAS): BASS & HAYES P34PD18SET BOX AND LID NOTE: REQUIRES PRIOR WRITTEN CITY APPROVAL 1-1/2" TO 2" METERS: DFW2818-IPLCIR-ITRON BOX AND LID
17. ALL WATER SERVICES TO BE MARKED BY "W" STAMPED OR CUT ON THE CURB AND PAINTED BLUE.
18. ALL COPPER AND HDPE FITTINGS SHALL BE COMPRESSION FITTINGS
19. INSTALL 2" PIPE AND TAP FOR 1-1/2" AND 2" METER INSTALLATIONS.
20. 1" MAX BULLHEAD SERVICE ON A 2" TAP.
21. MINIMUM 6" TAPS REQUIRED ON ALL WATER MAINS 16" AND LARGER.
22. METERS AND TAPS SHALL BE LOCATED ON SAME SIDE OF MAIN.
23. CONTRACTOR SHALL REMOVE ALL SAND OVER FITTINGS & INSTALL METER BOX PROVIDED BY CITY PRIOR TO REQUESTING METER INSTALLATION.
24. USE 2" X 1" FLANGED REDUCER IF REDUCING TO 1" METER.
25. ALL METER BOXES SHALL BE SET LEVEL AND THE TOP OF THE METER BOX SHALL BE SET 2% ABOVE THE TOP OF CURB WITHIN THE PARKWAY OR AS DIRECTED BY THE CITY ENGINEER, HIS DESIGNEE OR PUBLIC WORKS DEPARTMENT REPRESENTATIVE.
26. FLARED CORPORATIONS FOR POLYETHYLENE SERVICE LINES SHALL BE AS FOLLOWS:
   A. 1-1/2" FLARED CORPORATIONS MUELLER H15071NJ ADAPTORS OR APPROVED EQUAL.
   B. 2" FLARED CORPORATIONS MUELLER H15071NK ADAPTORS OR APPROVED EQUAL.



HORIZONTAL THRUST BLOCK NOTES:
RETAINER GLANDS OR OTHER RESTRAINING DEVICES MAY BE REQUIRED AS NEEDED.
1. ALL CALCULATIONS ARE BASED ON A WATER LINE PRESSURE OF 150 p.s.i. AND AN ALLOWABLE SOIL BEARING VALUE OF 2,500 POUNDS PER SQUARE FOOT.
2. 2000 PSI. CONCRETE SHALL BE USED FOR ALL BLOCKING.
3. THE MINIMUM VERTICAL DIMENSIONS OF ALL BLOCKING SHALL BE 1.5 TIMES THE PIPE DIAMETER WITH AT LEAST 0.75 TIMES THE PIPE DIAMETER EXTENDING BOTH ABOVE AND BELOW THE PIPE CENTERLINE. THIS DIMENSION DETERMINES THE "X" DIMENSION FOR 11 1/4° BENDS.
4. FOR 22-1/2°, 45°, 90°, AND TEE AND PLUGS, THE VERTICAL DIMENSION SHALL BE EQUAL TO THE HORIZONTAL DIMENSION SHOWN TO PRODUCE THE REQUIRED MINIMUM AREA.
5. ALL MINIMUM AREAS ARE IN SQUARE FEET.

PIPE SIZE	X DIA. FT.	11.25° "A"	MIN. AREA	22.5° "A"	MIN. AREA	45° "A"	MIN. AREA	90° "A"	MIN. AREA	TEE & PLUG "E"	MIN. AREA
4"	1.5	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.06	1.00	1.00
6"	1.5	1.00	1.00	1.00	1.00	1.14	1.30	1.55	2.40	1.30	1.70
8"	1.5	1.00	1.00	1.08	1.18	1.52	2.31	2.07	4.27	1.74	3.02
10"	1.5	1.00	1.00	1.35	1.84	1.90	3.61	2.58	6.66	2.17	4.71
12"	1.5	1.00	1.33	1.63	2.65	1.86	5.19	3.10	9.60	2.61	6.79
14"	1.5	1.03	1.81	1.90	3.60	2.66	7.07	3.61	13.06	3.04	9.246
16"	2.0	1.18	2.36	2.17	4.71	3.04	9.23	4.13	17.06	3.47	12.06
18"	2.0	1.33	2.99	2.44	5.96	3.42	11.69	4.65	21.59	3.91	15.27
20"	2.0	1.48	3.70	2.71	7.35	3.80	14.43	5.16	26.86	4.34	18.85
21"	2.0	1.55	4.07	2.85	8.11	3.99	15.91	5.42	29.39	4.56	20.78
24"	2.0	1.77	5.32	3.25	10.59	4.56	20.77	6.20	38.39	5.21	27.14
27"	2.5	1.99	6.73	3.66	13.40	5.13	26.29	6.97	48.58	5.86	34.35
30"	2.5	2.22	8.31	4.07	16.55	5.70	32.46	7.74	59.98	6.51	42.41
33"	2.5	2.44	10.06	4.47	20.02	6.27	39.28	8.52	72.57	7.16	51.31
36"	2.5	2.66	11.97	4.88	23.83	6.84	46.74	9.29	86.37	7.81	61.07
39"	3.0	2.88	14.05	5.29	27.97	7.41	54.86	10.07	101.36	8.47	71.68
42"	3.0	3.10	16.30	5.69	32.43	7.98	63.62	10.85	117.56	9.12	83.13

DIMENSIONS OF CONCRETE FOR HORIZONTAL THRUST BLOCKING AT FITTINGS

GENERAL NOTES:
A. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE CITY OF GRAND PRAIRIE, WHICH HAS ALSO ADOPTED THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - NORTH CENTRAL TEXAS" HEREIN REFERRED TO AS "N.C.T.C.O.G." SPECIFICATIONS. COPIES MAY BE OBTAINED FROM THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 616 SIX FLAGS DRIVE, SUITE 200, ARLINGTON, TEXAS 76005-5888. (817) 640-3300. THESE SPECIFICATIONS ARE ALSO AVAILABLE AT WWW.PUBLICWORKS.DFWINFO.COM
B. PLEASE ALSO REFER TO N.C.T.C.O.G. ITEM 501, 502, 503, 504, 505, 506 & 509 SPECIFICATIONS.
C. WHERE SPECIFIED NAME BRANDS ARE INDICATED, PRODUCTS OF EQUAL OR BETTER MAY BE CONSIDERED FOR APPROVAL UPON SUBMITTAL OF ALL SUPPORTING DATA TO THE CITY ENGINEER FOR REVIEW.
D. THE CONTRACTOR SHALL PROVIDE FOR TEMPORARY 3" COLD MIX ASPHALTIC CONCRETE AS PER N.C.T.C.O.G. ITEM 403.2.3 TO BE PLACED OVER ALL VEHICULAR TRAVELED AREAS UNTIL THE FINAL REPAIRS/IMPROVEMENTS ARE MADE.
E. ALL VALVES, VALVE STACKS AND COVERS ON ABANDONED WATER MAINS SHALL BE REMOVED COMPLETELY; SURFACE SHALL BE REPAIRED TO MATCH EXISTING.
F. CONTRACTOR SHALL CONTACT TRANSPORTATION DEPARTMENT FOR THE REMOVAL OF CITY SIGNS IN RIGHT-OF-WAY.

PIPE:
A. WATER MAINS UP TO 12" DIAMETER SHALL BE POLYVINYL CHLORIDE PVC DR18 (CLASS 150), OR DR14 (CLASS 200). WATER MAINS GREATER THAN 12" IN DIAMETER MAY BE ONE OF THE FOLLOWING:
 1. REINFORCED CONCRETE CYLINDER PIPE (RCCP) C303 PRESSURE CLASS 150 OR GREATER AS SPECIFIED BY THE ENGINEER.
 2. PVC PIPE WITH MINIMUM PRESSURE CLASS 165 C900 235 PSI. C905C OR AS APPROVED BY THE ENGINEER.
B. PVC PIPE SHALL NOT BE USED FOR MAINS GREATER THAN 24" IN DIAMETER.
C. EMBEDMENT:
 1. FOR PIPE SIZES 12" AND SMALLER, THE EMBEDMENT SHALL BE AS PER THE "PIPE EMBEDMENT DETAIL" ON THIS SHEET.
 2. FOR PIPE SIZES LARGER THAN 12", MINIMUM EMBEDMENT SHALL BE 1/4"-3/4" CRUSHED STONE 6" BELOW PIPE TO 6" ABOVE PIPE UNLESS SPECIFIED OTHERWISE BY THE ENGINEER.
D. COVER: THE FOLLOWING MINIMUM COVERS OVER THE WATERLINE ARE REQUIRED:
 1. 42" OF COVER OVER WATERLINES 8" IN DIAMETER OR LESS
 2. 48" OF COVER OVER WATERLINES 12" IN DIAMETER,
 3. 60" TO 72" OF COVER OVER WATERLINES LARGER THAN 12" IN DIAMETER. NOTE: WATER MAINS BURIED WITH OVER 72" OF COVER SHALL BE APPROVED BY THE CITY ENGINEER.
E. STORAGE: PVC WATER PIPE IS ALLOWED TO BE STORED A MAXIMUM OF SIX (6) MONTHS WITHOUT COVER. THEREAFTER ALL PIPES SHALL BE COVERED OR KEPT AWAY FROM SUNLIGHT AND SHALL BE PROTECTED FROM OTHER ELEMENTS.
F. INSTALLATION:
 1. EITHER BLUE OR WHITE PVC WATER PIPE IS ACCEPTABLE FOR THE INSTALLATION. HOWEVER, WHEN EITHER COLOR PVC PIPE IS USED, THE CONTRACTOR IS RESPONSIBLE TO INSTALL THE PIPE IN A WAY THAT THE WRITING ON THE PIPE IS INSTALLED ON THE SIDE UP AND IS READABLE FROM THE TOP OF THE DITCH.
 2. ALL WATER MAINS, VALVES, FITTINGS, ETC. MADE WITH DUCTILE IRON OR FERROUS METAL SHALL BE WRAPPED WITH 8 MIL. POLYWRAP.
G. BEVELED ENDS OF THE PIPE SHALL BE REMOVED WHEN USED IN MJ FITTING
H. CASINGS: WHEN PVC WATER PIPE IS INSTALLED IN CASING, SKIDS MUST BE USED TO PREVENT DAMAGE TO THE PIPE AND BELL DURING INSTALLATION. PVC PIPE SHOULD NOT REST ON THE BELLS. PLASTIC SPACERS SUCH AS RACI OR APPROVED EQUAL SHALL BE USED.
I. MUST STUB OUT AT LEAST ONE FULL JOINT OF PIPE AT ALL STUB OUTS. NO SERVICES SHALL BE LOCATED ON THE STUB OUT.
J. PLACE PIPE WITH LETTERING FACING UP (ON TOP OF PIPE)
K. MAXIMUM PIPE DEFLECTION SHALL BE AS RECOMMENDED BY MANUFACTURER
L. DUCTILE IRON PIPE WHERE SPECIFIED BY THE ENGINEER SHALL HAVE CEMENT-MORTER LINING PER AWWA C104 SPECIFICATIONS AND SHALL BE OF A MINIMUM THICKNESS CLASS 51 OR GREATER AND HAVE A MINIMUM 8 MILS POLYWRAP.

FITTINGS:
A. THE CONTRACTOR MAY USE CAST IRON OR DUCTILE IRON FITTINGS, COMPLETE WITH EPOXY COATING AND 8 MIL. (MIN.) POLYWRAP
B. ALL FITTINGS SHALL BE BLOCKED AS PER DETAILS ON THIS SHEET.
C. ALL FITTINGS SHALL BE MJ UNLESS SPECIFIED OTHERWISE. PVC FITTINGS ARE NOT ALLOWED
D. PLEASE ALSO REFER TO N.C.T.C.O.G. ITEM 501 SPECIFICATIONS.
E. ALL BENDS, TEES AND PLUGS SHALL HAVE RETAINER GLANDS.
F. USE AWWA C110 DUCTILE IRON FITTINGS FOR PIPES 3"-48" IN DIAMETER AND AWWA C153 FOR DUCTILE IRON COMPACT FITTINGS FOR PIPES 3"-16" IN DIAMETER.
G. DUCTILE IRON INTEGRAL RESTRAINED JOINT FITTINGS ARE PERMISSIBLE FOR PVC AND DUCTILE IRON PIPE SIZES 4"-12" IN DIAMETER; NOTE: CONCRETE BLOCKING IS NOT REQUIRED WITH THESE FITTINGS.
H. ALL DUCTILE IRON AND CAST IRON FITTINGS SHALL BE MANUFACTURED IN THE UNITED STATES.
I. POLYWRAP SADDLES WITH 8 MIL POLYWRAP.

VALVES:
A. VALVES INSTALLED ON WATERLINES 12" IN DIAMETER OR LESS SHALL BE VERTICAL GATE VALVES.
B. VALVES INSTALLED ON WATERLINES LARGER THAN 12" IN DIAMETER SHALL BE DIRECT BURY BUTTERFLY VALVES WITH A VALVE BOX. PLEASE NOTE THAT SPECIAL FITTINGS SHALL BE INSTALLED TO ALLOW POLY-PIGGING OF NEW INSTALLATIONS. COST INCIDENTAL TO PROJECT OVERALL
C. BUTTERFLY VALVES SHALL CONFORM TO AWWA C504 STANDARDS LATEST REVISION.
D. BUTTERFLY VALVES SHALL BE MUELLER, CLOW, PRATT, M&H OR AN APPROVED EQUAL.
E. ALL GATE VALVES SHALL HAVE NON-RISING STEMS AND RESILIENT SEATED WEDGE.
F. ALL VALVES AND FIRE HYDRANTS SHALL BE IN LINE WITH THE PROPERTY LINE, WHERE POSSIBLE.
G. ALL VALVE LOCATIONS SHALL BE MARKED WITH "V" STAMPED OR CUT ON THE CURB.
H. PLEASE ALSO REFER TO THE DETAILS ON THIS SHEET AND N.C.T.C.O.G. ITEM 502.6. SPECIFICATIONS.
I. ALL STUB-OUT VALVES TO HAVE A MINIMUM 20' JOINT OF PIPE.
J. ALL VALVES TO BE FLANGED VALVES OR ANCHOR COUPLE TO TEE WHERE APPLICABLE.

TESTING:
A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOLLOWING:
 1. PURGING BY USING THE "POLY-PIG" METHOD TO ENTER AND EXIT AT APPROVED STRATEGIC LOCATIONS AND AS PER N.C.T.C.O.G. ITEM 506.7.3.1 SPECIFICATIONS, TO INCLUDE ALL EQUIPMENT, MATERIAL, FITTINGS, AND LABOR.
 2. HYDROSTATIC TEST AS PER N.C.T.C.O.G. ITEM 506.5 SPECIFICATIONS.
 3. STERILIZATION SHALL FOLLOW AS PER N.C.T.C.O.G. ITEM 506.7. SPECIFICATIONS AND AS APPROVED BY THE CITY ENGINEER.
 4. ALL TEMPORARY TEST POINTS TO HAVE CORPORATION STOPS AT THE MAIN.
 5. ALL TEMPORARY TESTING & CHLORINATION POINTS SHALL BE REMOVED AT THE CORPORATION, PRIOR TO FINAL ACCEPTANCE.
 6. ONE WATER SAMPLE PER EACH STREET NAME, OR AS APPROVED BY THE CITY ENGINEER.
 (i) PLEASE REFER TO THE STANDARD GENERAL TESTING REQUIREMENTS FOR WATER, WASTEWATER, STORM DRAIN AND PAVEMENT CONSTRUCTION DETAIL SHEET.
 (ii) THE CITY WILL PROVIDE BACKFILL, DENSITY AND CONCRETE TESTING FOR ALL PROJECTS UNLESS SPECIFIED OTHERWISE. ALL REPORTS SHALL BE TURNED IN TO THE INSPECTOR WITHIN FIVE (5) WORKING DAYS.

MATERIAL:
A. ALL MATERIAL INCORPORATED IN THE CONSTRUCTION SHALL BE NEW.

PRIVATE DEVELOPMENT PROJECTS:
A. THE DEVELOPER/OWNER SHALL PROVIDE ESCROW FUNDS FOR GEOTECHNICAL AND MATERIAL TESTING AS PER CITY ORDINANCE #7951 FOR BACKFILL, DENSITY AND CONCRETE TESTING PRIOR TO BEGINNING ANY CONSTRUCTION.

03/28/2016

CERTIFICATION:
THIS CITY OF GRAND PRAIRIE STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM THE CITY OF GRAND PRAIRIE.

STATE OF TEXAS
MATT MOORE
95813
LICENSED
PROFESSIONAL ENGINEER

C-12

WATER

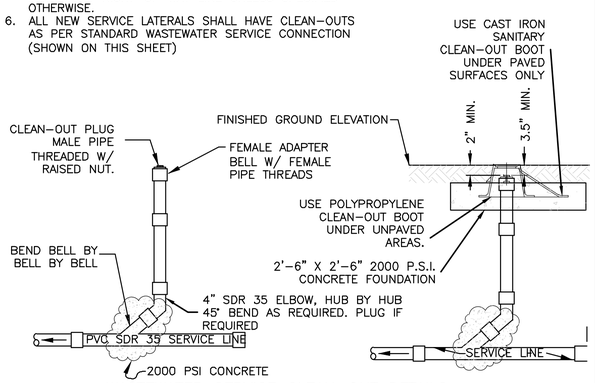
STANDARD DETAILS

Grand Prairie
TEXAS
ENGINEERING

DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
G.F.	J.P.	R.A.K.	NOV. 2015	N.T.S.		

WASTEWATER SERVICE CLEAN–OUT NOTES:

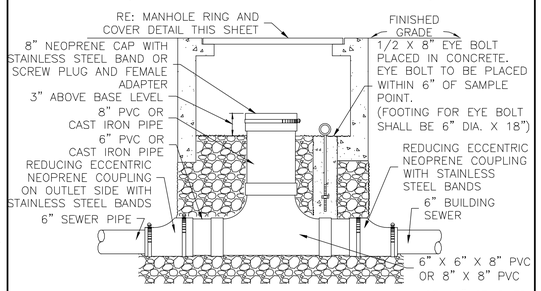
1. FOR NEW DEVELOPMENT EXTEND PVC CLEAN–OUT ABOVE FINISHED GRADE WITH PLUG.
2. AT THE TIME OF SERVICE CONNECTION THE CLEAN–OUT EXTENSION SHALL BE ADJUSTED AND THE APPROPRIATE CLEAN–OUT BOOT INSTALLED AT THE FINISHED GROUND ELEVATION.
3. ALL FITTINGS SHALL BE SOLVENT WELD
4. ALL FITTINGS SHALL BE PVC SDR 35 OR SCHEDULE 40
5. CENTER LINE OF CLEAN–OUTS TO BE PLACED 6 INCHES INSIDE CITY RIGHT–OF–WAY LINE UNLESS SPECIFIED OTHERWISE.
6. ALL NEW SERVICE LATERALS SHALL HAVE CLEAN–OUTS AS PER STANDARD WASTEWATER SERVICE CONNECTION (SHOWN ON THIS SHEET)



WASTEWATER SERVICE CLEAN–OUT DETAILS
N.T.S.

INDUSTRIAL WASTE SAMPLING POINT IN PAVED AREA

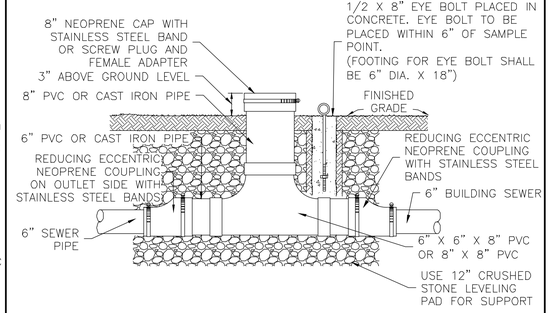
***(NOT TO BE PLACED IN CITY R.O.W. OR EASEMENT)**



*SHALL BE PLACED ON OWNER'S PROPERTY AT MINIMUM DISTANCE OF FOUR (4') FEET FROM R.O.W./EASEMENT LINE INDUSTRIAL WASTE SAMPLE POINT DOES NOT REPLACE THE CITY CLEAN–OUT

INDUSTRIAL WASTE SAMPLING POINT

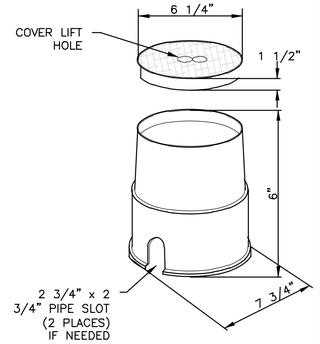
***(NOT TO BE PLACED IN CITY R.O.W. OR EASEMENT)**



*SHALL BE PLACED ON OWNER'S PROPERTY AT MINIMUM DISTANCE OF FOUR (4') FEET FROM R.O.W./EASEMENT LINE INDUSTRIAL WASTE SAMPLE POINT DOES NOT REPLACE THE CITY CLEAN–OUT

SPECIFICATIONS:

1. SNAP IN GREEN LID
2. LOWER BODY BLACK ONLY
3. CAN BE NESTED, IS EXTENDABLE TO ANY DEPTH BY USE OF 6" PVC PIPE FOR EXTENSION.
4. DALLAS SPECIALTY DS–109 OR EQUAL.



NOTE: FOR SERVICE CLEAN–OUT USE BASS & HAYS 404C (LATERAL CLEAN–OUT W/GASKET AND TWO BOLTS) OR APPORVED EQUAL.

POLYPROPYLENE CLEAN–OUT BOOT
N.T.S.
(TO BE USED UNDER UNPAVED SURFACES ONLY)

GENERAL NOTES

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B. PLEASE ALSO REFER TO N.C.T.C.O.G. ITEM 501, 502, 503, 504, 505, 507 AND 509 SPECIFICATIONS.
C. CONTRACTOR SHALL CONTACT TRANSPORTATION DEPARTMENT FOR THE REMOVAL OF CITY SIGNS IN RIGHT–OF–WAY.

PIPE:

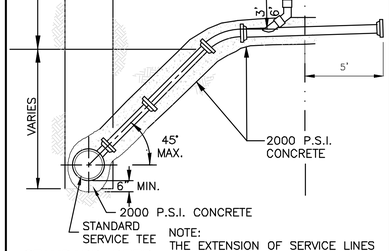
A. 12" DIAMETER OR SMALLER PVC PIPE SHALL BE AS FOLLOWS UNLESS SPECIFIED AND APPROVED OTHERWISE BY THE CITY ENGINEER:
   1. SDR 35 FOR DEPTH OF LESS THAN 12'.
   2. SDR 26 OR PIPE STIFFNESS OF 46 PSI FOR DEPTH OF 12' OR GREATER.
B. 15"–27" PVC PIPE SHALL BE AS FOLLOWS :
   1. ASTM DESIGNATION F–794, "PVC RIBBED GRAVITY SEWER PIPE AND FITTING BASED ON CONTROLLED INSIDE DIAMETER." PER ITEM 501.18 OF N.C.T.C.O.G. SPECIFICATIONS
   2. ASTM DESIGNATION F–949, "PVC CORRUGATED SEWER PIPE WITH SMOOTH INTERIOR AND FITTINGS" PER ITEM 501.18 OF N.C.T.C.O.G. SPECIFICATIONS
   3. ASTM DESIGNATION F–679 TYPE T–2B FOR DEPTH LESS THAN 20' PER ITEM 501.17 OF N.C.T.C.O.G. SPECIFICATIONS
   4. ASTM DESIGNATION F–679 TYPE T–1A FOR FOR DEPTH GREATER THAN 20' PER ITEM 501.17 OF N.C.T.C.O.G. SPECIFICATIONS
C. 30" PVC AND LARGER SHALL BE AS FOLLOWS:
   1. ASTM DESIGNATION F–794, "PVC RIBBED GRAVITY SEWER PIPE AND FITTING BASED ON CONTROLLED INSIDE DIAMETER." PER ITEM 501.18 OF N.C.T.C.O.G. SPECIFICATIONS.
   2. ASTM DESIGNATION F–949, "PVC CORRUGATED SEWER PIPE WITH SMOOTH INTERIOR AND FITTINGS" PER ITEM 501.18 OF N.C.T.C.O.G. SPECIFICATIONS.
   3. POLYVINYL CHLORIDE PVC CLOSED PROFILE GRAVITY PIPE AND FITTINGS AS PER ASTM F1803 PER ITEM 501.18 OF N.C.T.C.O.G. SPECIFICATIONS
D. FOR AERIAL CROSSINGS, UNENCASED PIPE SHALL BE DUCTILE IRON CLASS 52 WITH POLYETHYLENE LINER. ALL BURIED SECTION OF THE DUCTILE IRON PIPE SHALL BE WRAPPED WITH 8 MIL. POLYWRAP.
E. FORCE MAINS SHALL BE MINIMUM SDR26, PRESSURE CLASS 200 PSI, AND PIPE STIFFNESS OF 72 PSI.
F. EMBEDMENT SHALL BE AS PER THE "WASTEWATER PIPE EMBEDMENT DETAIL" ON THIS SHEET.
G. THE MINIMUM COVER OVER ALL WASTEWATER MAINS IS 4 FEET, UNLESS APPROVED OTHERWISE BY THE CITY ENGINEER. APPROVED MAINS WITH LESS THAN 3.5 FEET OF COVER SHALL BE CAPPED AS PER THE "CAP DETAIL" ON THIS SHEET.
H. CLAY CUT–OFF WALLS SHALL BE CONSTRUCTED AS PER THE DETAILS AND SPECIFICATIONS ON THIS SHEET.
I. STORAGE: WHEN EXPOSURE IN EXCESS OF SIX MONTHS TO DIRECT SUNLIGHT IS ANTICIPATED, PVC PIPE SHOULD BE COVERED WITH AN OPAQUE MATERIAL WHILE PERMITTING ADEQUATE AIR CIRCULATION ABOVE AND AROUND THE PIPE AS REQUIRED PREVENTING EXCESSIVE HEAT ACCUMULATION.
J. CASINGS: WHEN PVC WASTEWATER PIPE IS INSTALLED IN CASING, SPACERS MUST BE USED TO PREVENT DAMAGE TO THE PIPE AND BELL DURING INSTALLATION. PVC PIPE SHALL NOT REST ON THE BELLS. PLASTIC SPACERS SUCH AS RACI OR APPROVED EQUAL SHALL BE USED.
K. PLACE PIPE WITH LETTERING FACING UP ON TOP OF PIPE
L. MAXIMUM PIPE DEFLECTION SHALL BE AS RECOMMENDED BY MANUFACTURER

FITTINGS:

A. ALL FITTINGS SHALL BE RUBBER GASKET PUSH ON TYPE.
B. ALL FITTINGS SHALL BE BLOCKED AS PER THE DETAILS ON THIS SHEET.
C. ALL PIPE CONNECTION FITTINGS SUCH AS ADAPTORS AND COUPLINGS SHALL BE COMPATIBLE WITH THE SAME PIPE MATERIAL. FLEXIBLE ADAPTORS AND COUPLINGS SHALL NOT BE PERMITTED UNLESS PRE–APPROVED BY THE ENGINEER.

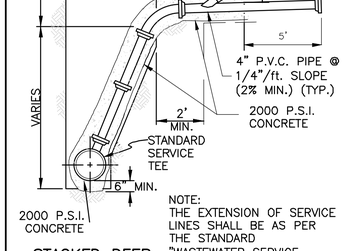
WASTEWATER SERVICE NOTES:

A. ALL PROPERTY CORNERS SHALL BE LOCATED PRIOR TO THE INSTALLATION OF ANY WASTEWATER SERVICES.
B. THE LOCATIONS OF THE WASTEWATER SERVICE SHALL BE STAKED ACCORDING TO THE PLANS.
C. COMMERCIAL AND INDUSTRIAL SERVICES SHALL BE 6" DIAMETER PIPE AND SHALL ENTER AT THE MANHOLE AND SHALL HAVE A CLEAN–OUT AT THE PROPERTY OR EASEMENT LINE
D. WASTEWATER SERVICES TO BE MARKED WITH "S" STAMPED OR CUT IN THE CURB. PLEASE ALSO REFER TO THE DETAILS AND NOTES ON THIS SHEET.
E. COMMERCIAL AND INDUSTRIAL LOCATIONS SHALL HAVE 6" SERVICE CONNECTED AT A MANHOLE.
F. ALL NEW 4" HOUSE SERVICE LINES SHALL EXTEND 5' BEYOND PROPERTY LINE.



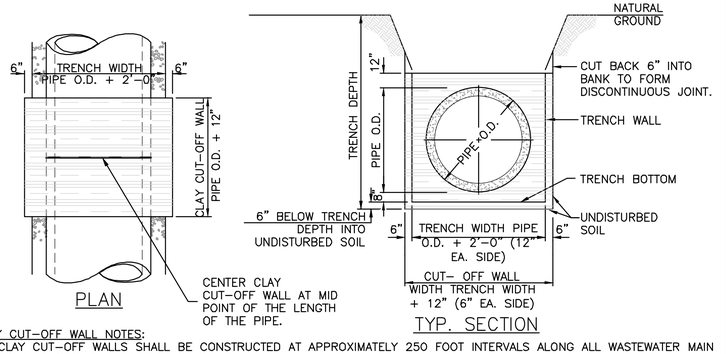
STANDARD DEEP CUT CONNECTION
N.T.S.

NOTE:
THE EXTENSION OF SERVICE LINES SHALL BE AS PER THE STANDARD "WASTEWATER SERVICE CONNECTION" DETAIL, ON THIS SHEET.



STACKED DEEP CUT CONNECTION
N.T.S.

NOTE:
THE EXTENSION OF SERVICE LINES SHALL BE AS PER THE STANDARD "WASTEWATER SERVICE CONNECTION" DETAIL, ON THIS SHEET.

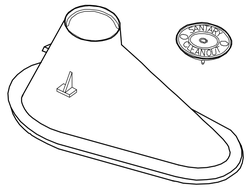


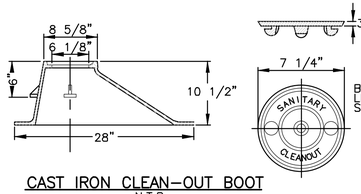
CLAY CUT–OFF WALL NOTES:

1. CLAY CUT–OFF WALLS SHALL BE CONSTRUCTED AT APPROXIMATELY 250 FOOT INTERVALS ALONG ALL WASTEWATER MAIN INSTALLATIONS BETWEEN MANHOLES.
2. THE CLAY CUT–OFF WALL SHALL BE PLACED AT THE MID POINT OF THE LENGTH OF THE PIPE BEING PLACED, BUT NOT AT A LOCATION WHERE A LATERAL OR SERVICE CONNECTS TO THE MAIN. THE MINIMUM CLEARANCE IS 10 FEET.
3. MATERIAL FOR CLAY CUT–OFF WALL TO BE CLEAN MATERIAL WITH NO LUMPS LARGER THAN 3". CLAY TO HAVE P.I. OF 30 OR GREATER. MATERIAL TO BE PLACED IN LIFTS, MOISTENED TO OPTIMUM MOISTURE CONTENT AND COMPACTED WITH HAND HELD MECHANICAL TAMPERS, WITHOUT DAMAGING THE PIPE.

CLAY CUT–OFF WALL
N.T.S.

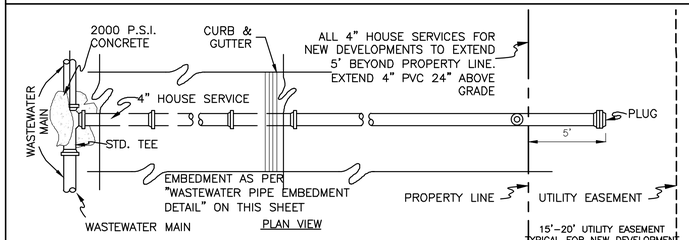
NOTE: CLEAN–OUTS FOR NEW CONSTRUCTION ARE NOT PERMISSIBLE INSIDE DRIVEWAYS



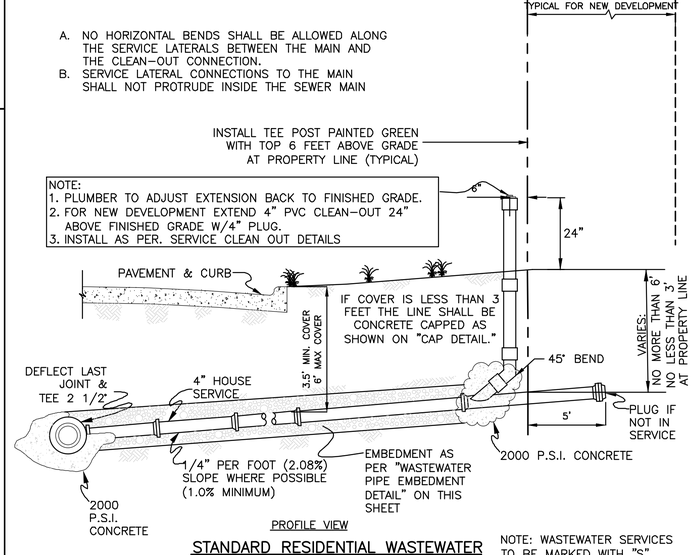


CAST IRON CLEAN–OUT BOOT
N.T.S.

BASS & HAYS # 339 OR EQUAL
(TO BE USED UNDER PAVED SURFACES ONLY)

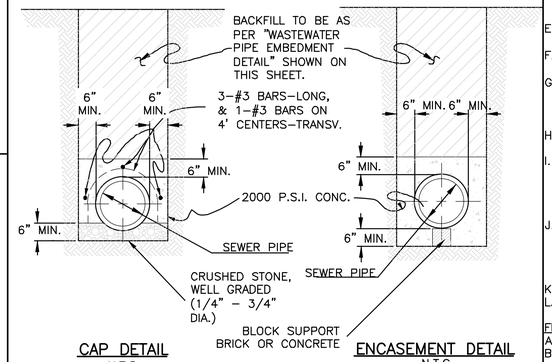


A. NO HORIZONTAL BENDS SHALL BE ALLOWED ALONG THE SERVICE LATERALS BETWEEN THE MAIN AND THE CLEAN–OUT CONNECTION.
B. SERVICE LATERAL CONNECTIONS TO THE MAIN SHALL NOT PROTRUDE INSIDE THE SEWER MAIN



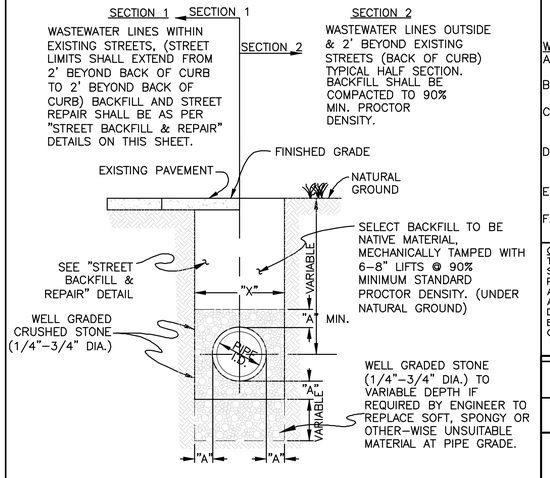
STANDARD RESIDENTIAL WASTEWATER SERVICE CONNECTION
N.T.S.

NOTE: WASTEWATER SERVICES TO BE MARKED WITH "S" STAMPED OR CUT IN CURB PAINTED GREEN.



CAP DETAIL
N.T.S.

ENCASEMENT DETAIL
N.T.S.



WASTEWATER PIPE EMBEDMENT DETAIL
N.T.S.

SEE PAVEMENT & BACKFILL TRENCH REPAIRS DETAIL SHEET

CERTIFICATION:
THIS CITY OF GRAND PRAIRIE STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM THE CITY OF GRAND PRAIRIE.

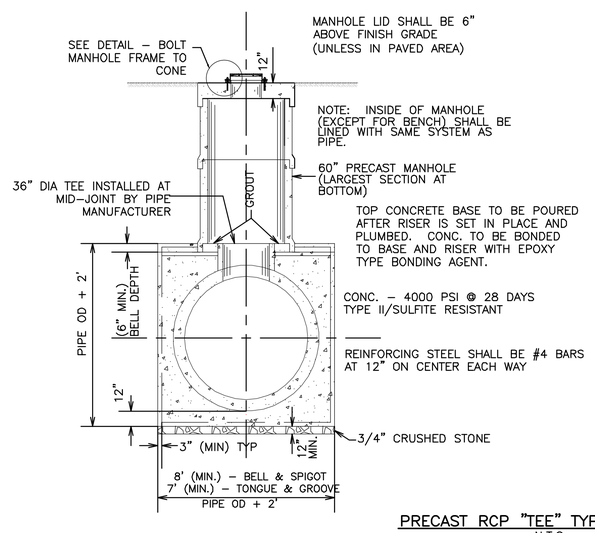
STATE OF TEXAS · MATT MOORE · 95813 · LICENSED PROFESSIONAL ENGINEER
C-13
03/28/2016

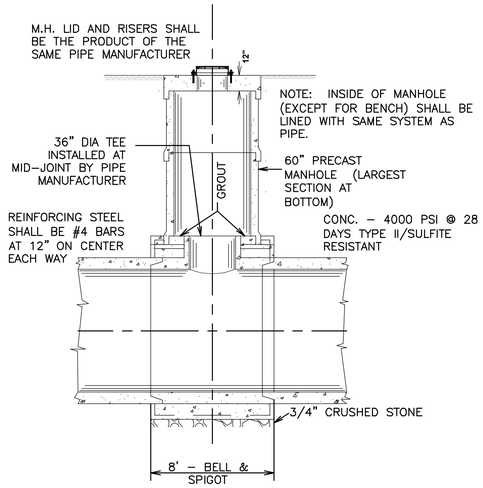
WASTEWATER 1 OF 2

STANDARD DETAILS

GRand PRaiRie TEXAS
ENGINEERING

DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
G.F.	J.P.	G.F.	NOV. 2015	N.T.S.		





PRECAST RCP "TEE" TYPE MANHOLE

N.T.S.

CONCRETE MANHOLE NOTES:

1. CONCRETE FOR ALL PRECAST AND POURED IN PLACE MANHOLES SHALL BE MIN. 6 SACK 4000 P.S.I. SULFATE RESISTANT CONCRETE, SUCH AS : TYPE II OR TYPE V CEMENT
2. THE DIAMETER OF THE CONCRETE BASE SHALL NOT BE LESS THAN THE INSIDE DIAMETER OF THE MANHOLE PLUS 2 FT.
3. STEPS SHALL NOT BE INSTALLED IN MANHOLE.
4. ALL NEW MANHOLES SHALL BE MARKED WITH "MH" STAMPED OR CUT IN THE CURB PAINTED GREEN.
5. USE DROP CONNECTIONS WHEN CONNECTING LINE EXCEEDS 24" ABOVE THE MANHOLE FLOW LINE.
6. USE OUTSIDE DROP CONNECTIONS ON ALL NEW MANHOLES.
7. USE INSIDE DROP CONNECTION ON EXISTING MANHOLES ONLY, MUST BE APPROVED BY CITY ENGINEER.
8. MANHOLE WALLS SHALL BE CORE DRILLED FOR SEWER CONNECTIONS.

MANHOLE ABANDONMENT

1. REMOVE FRAME, LID AND CONE.
2. CUT AND PLUG ALL ABANDONED SEWER MAINS AT MANHOLE.
3. FILL BOTTOM 12" OF MANHOLE WITH 2000 PSI CONCRETE.
4. BACKFILL AND COMPACT MANHOLE CAVITY WITH SAND AND/OR GRAVEL.
5. REPAIR SURFACE TO MATCH EXISTING AS PER CITY STANDARDS.

MANHOLES:

A. ONLY CONCRETE MANHOLES ARE APPROVED FOR USE ON THE MAIN AND AT THE ENDS OF THE PIPE.
B. ALL NEW MANHOLE LOCATIONS SHALL BE MARKED WITH "MH" STAMPED OR CUT ON THE CURB.
C. MANHOLES SHALL BE INSTALLED AT ALL ANGLE POINTS AND SHALL HAVE A MAXIMUM SPACING OF 500' FOR MAINS SMALLER THAN 18" IN DIAMETER. THE MANHOLE SPACING MAY BE INCREASED TO 750' FOR MAINS 18" AND LARGER IN DIAMETER.
D. MANHOLE BRACES PLACED ON EXISTING ACTIVE MAINS SHALL BE POURED IN PLACE UNLESS WRITTEN PERMISSION IS GRANTED BY THE CITY OF GRAND PRAIRIE OR SPECIFICALLY NOTED IN THE PLANS.
E. PLEASE ALSO REFER TO THE DETAILS AND NOTES ON THIS SHEET AND N.C.T.C.O.G. ITEM 502.1. SPECIFICATIONS.
F. ALL MANHOLES SHALL BE MINIMUM 6–SACK 4,000 P.S.I SULPHATE RESISTANT CONCRETE. SUCH AS: TYPE II OR TYPE V CEMENT.

TESTING:

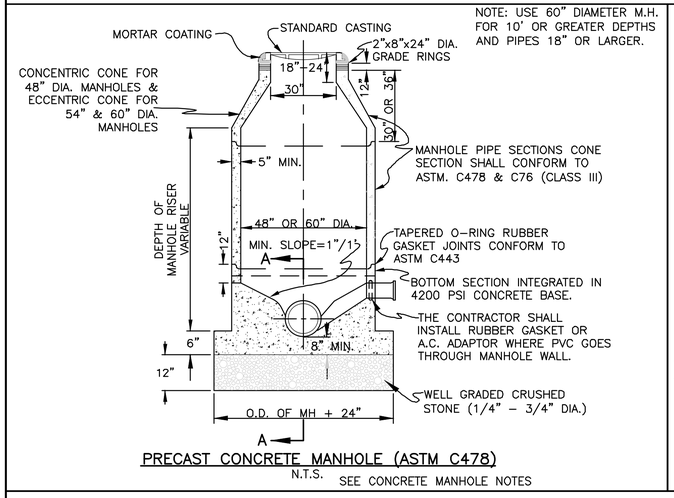
A. THE FOLLOWING TESTS SHALL BE PERFORMED BY THE CONTRACTOR:
   1. LOW PRESSURE AIR TESTING AS PER N.C.T.C.O.G. ITEM 507.5.1.3 SPECIFICATIONS.
   2. DEFLECTION TEST AS PER N.C.T.C.O.G. ITEM 507.5.1.4. SPECIFICATIONS.
   3. TELEVISING SHALL BE AS PER THE N.C.T.C.O.G. ITEM 507.5.2. PRIOR TO PLACING PAVEMENT.
   4. ALL T.V. INSPECTIONS OF EXISTING OR PROPOSED PIPES SHALL BE PROVIDED ON DVD.
B. PLEASE REFER TO THE STANDARD GENERAL TESTING REQUIREMENTS FOR WATER, WASTEWATER, STORM DRAIN AND PAVEMENT CONSTRUCTION DETAIL SHEET.
C. THE CITY WILL PROVIDE BACKFILL, DENSITY AND CONCRETE TESTING FOR ALL CITY PROJECTS UNLESS SPECIFIED OTHERWISE. ALL REPORTS SHALL BE TURNED INTO THE INSPECTOR WITHIN FIVE 5 WORKING DAYS.

MATERIAL:

ALL MATERIAL INCORPORATED IN THE CONSTRUCTION SHALL BE NEW.

PRIVATE DEVELOPMENT PROJECTS:

THE DEVELOPER/OWNER SHALL PROVIDE ESCROW FUNDS FOR GEOTECHNICAL AND MATERIAL TESTING AS PER CITY ORDINANCE #7951 FOR BACKFILL, DENSITY AND CONCRETE TESTING PRIOR TO BEGINNING ANY CONSTRUCTION.

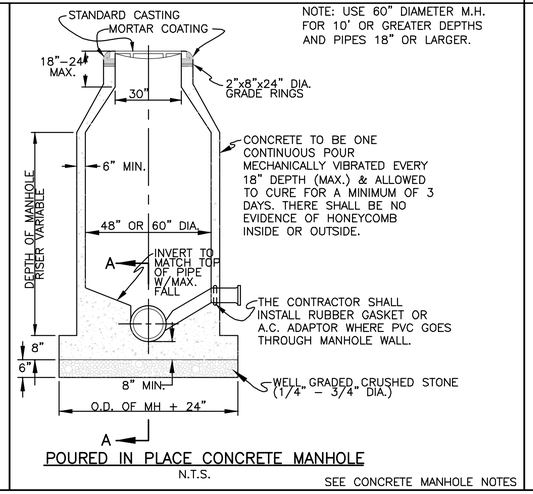


NOTE: USE 60" DIAMETER M.H. FOR 10' OR GREATER DEPTHS AND PIPES 18" OR LARGER.

PRECAST CONCRETE MANHOLE (ASTM C478)

N.T.S.

SEE CONCRETE MANHOLE NOTES

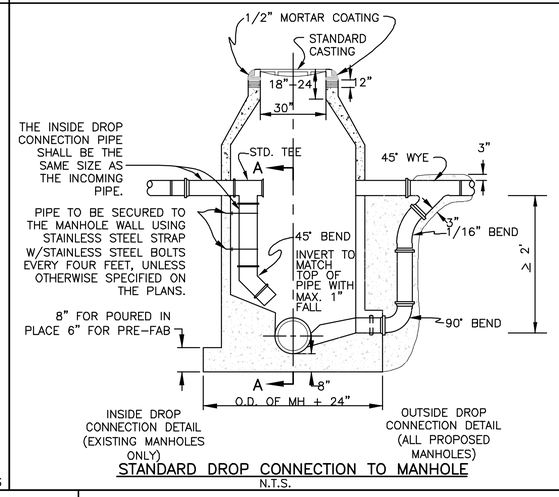


NOTE: USE 60" DIAMETER M.H. FOR 10' OR GREATER DEPTHS AND PIPES 18" OR LARGER.

POURED IN PLACE CONCRETE MANHOLE

N.T.S.

SEE CONCRETE MANHOLE NOTES

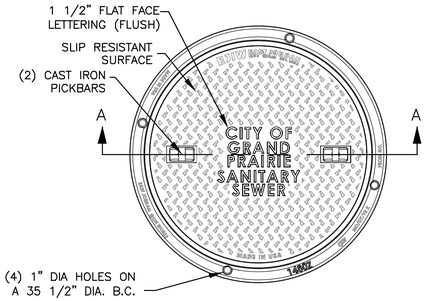


STANDARD DROP CONNECTION TO MANHOLE

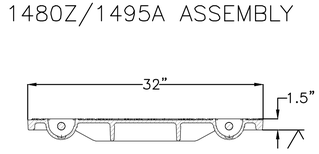
N.T.S.

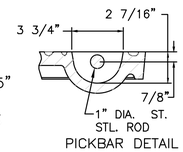
MANHOLE RING AND COVER NOTES:

1. MANHOLE LIDS SHALL HAVE PICK SLOTS ONLY.
2. M.H. RING & COVERS SHALL BE EAST JORDAN IRON WORKS PRODUCT NUMBER 00149551A01 OR APPROVED EQUAL
3. M.H. IN STREET GUTTERS AND LOW POINTS SHALL BE BOLTED DOWN, GASKETED, AND WATER TIGHT. (EAST JORDAN IRON WORKS PRODUCT NUMBER 00149551A01).
4. MANHOLE COVERS SHALL BE COATED WITH WATER BASED ASPHALTIC PAINT (ROYAL PC OR APPROVED EQUAL) AND IT SHALL MEET ANSI–NSF STD6COATING MAY BE SPRAY APPLIED AT 5MILS WET FILM THICKNESS OR DIPPED AND CURED 3MILS DRY FILM THICKNESS.



1480Z/1495A ASSEMBLY





PICKBAR DETAIL

PRODUCT NUMBER

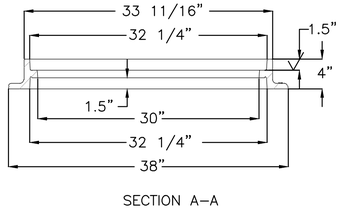
00149551A01

DESIGN FEATURES

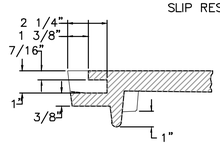
MATERIALS:
COVER–DUCTILE IRON
ASTM A536
FRAME–GRAY IRON
ASTM A48 CL35B
DESIGN LOAD:
HEAVY DUTY
COATING:
UNDIPPED
OPEN AREA
N/A

SPECIAL FEATURES

SLIP RESISTANT SURFACE



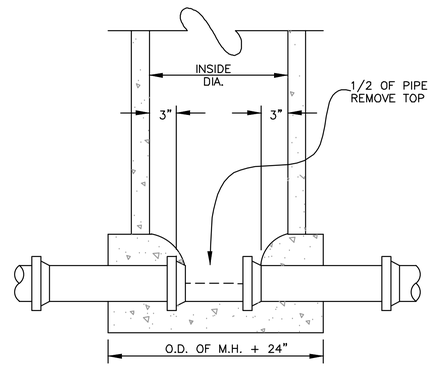
SECTION A–A



PICKHOLE DETAIL

MANHOLE RING & COVER

N.T.S.



MANHOLE SECTION "A–A"

N.T.S.

CERTIFICATION:
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STATE OF TEXAS · MATT MOORE · 95813 · LICENSED PROFESSIONAL ENGINEER

03/28/2016

C-14

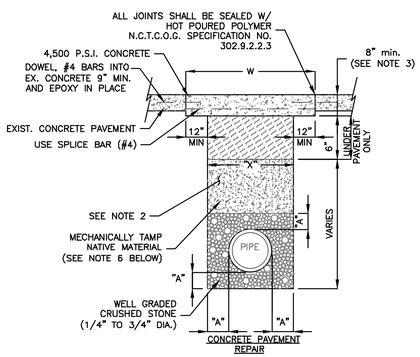
WASTEWATER 2 OF 2

STANDARD DETAILS

GRand PRaiRie TEXAS

ENGINEERING

DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
G.F.	J.P.	G.F.	NOV. 2015	N.T.S.		



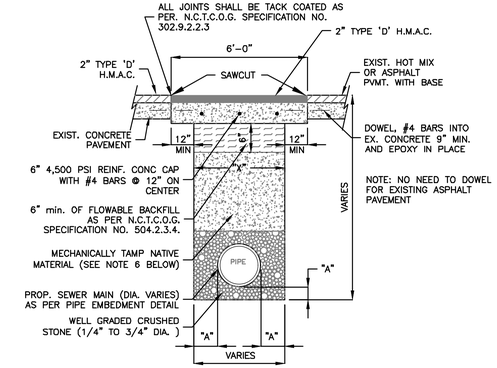


TABLE OF DIMENSIONS FOR WIDTH OF TRENCH AND PAVEMENT REPLACEMENT

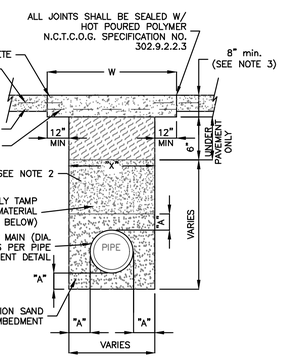
NORMAL SIZE OF PIPE IN INCHES*	O.D. OF PIPE BELL IN INCHES (PVC-SDR35)		MINIMUM TRENCH WALL CLEARANCE "A" IN INCHES		WIDTH OF TRENCH ('X') MAXIMUM IN INCHES (NOTE 5)	WIDTH OF TRENCH ('X') MINIMUM IN INCHES (NOTE 5)	WIDTH OF PVMT. REPLACEMENT (NOTE 4) ('W') CONC. & ASPHALT (NOTE 5)
4	4.67	6	24	18	42		
6	6.74	6	24	19	48		
8	8.99	6	24	21	48		
10	11.27	6	28	24	48		
12	13.27	6	30	26	50		
15	16.45	8	37	33	57		
18	20.73	8	41	37	61		
21	24.42	8	45	41	65		
24	27.21	8	48	44	68		
27	30.61	8	51	47	71		

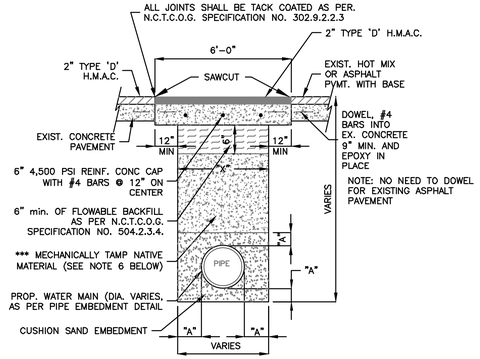
* ENGINEER OF RECORD SHALL SPECIFY TRENCH DIMENSION FOR PIPE GREATER THAN 27" IN DIAMETER

NOTES:
1. FULL-DEPTH SAWCUT TO REPAIR ASPHALT OR CONCRETE PAVEMENT PRIOR TO OPENING THE DITCH IN ORDER TO ENSURE A NEAT STRAIGHT EDGE.
2. MODIFIED FLOWABLE BACKFILL MAY BE UTILIZED IN-LIEU OF NATIVE MATERIAL.
3. DEPTH OF CONCRETE REPAIR SHALL MATCH EXISTING PAVING DEPTH OR 8" MINIMUM.
4. REFER TO THE PLANS FOR SPECIFIED WIDTH OF REPLACEMENT.
5. RECOMMENDED WIDTHS – VARIES BASED ON DEPTH, AND SOIL MATERIAL.
6. MECHANICALLY TAMP NATIVE MATERIAL (6"ø CLODS OR SMALLER IN 6"-8" LIFTS) TO 95% OF THE MAXIMUM DRY DENSITY DETERMINED BY THE STD. PROCTORTEST, ASTM D698 WITH MOISTURE CONTENT OF THE FILL AT THE TIME OF COMPACTION TO BE NEAR OPTIMUM OR 4% ABOVE PROCTOR OPTIMUM VALUE.
7. CONCRETE FOR PAVING REPAIRS SHALL BE MADE WITH A MINIMUM OF 6 1/2 SACKS OF CEMENT AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS.
8. ALL REINFORCING STEEL SHALL BE NEW, NEAT, BILLET-STEEL PER ASTM DESIGNATION A-615, GRADE 60, AND SHALL BE DETAILED AND PLACED PER ACI MANUALS SP-88 AND 318, LATEST ADDITIONS. ALL REINFORCING STEEL SHALL HAVE MINIMUM 15 INCH LAP SPLICES, UNLESS NOTED OTHERWISE ON THE PLANS.
9. THE CONTRACTOR SHALL USE A LIQUID MEMBRANE-FORMING CURING COMPOUND PER N.C.T.C.O.G. ITEM ITEM 303.2.12.1.1.

PAVEMENT BACKFILL & REPAIR FOR WASTEWATER

N.T.S.





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3. DEPTH OF CONCRETE REPAIR SHALL MATCH EXISTING PAVING DEPTH OR 8" MINIMUM.
4. REFER TO THE PLANS FOR SPECIFIED WIDTH OF REPLACEMENT.
5. RECOMMENDED WIDTHS – VARIES BASED ON DEPTH, AND SOIL MATERIAL.
6. MECHANICALLY TAMP NATIVE MATERIAL (6"ø CLODS OR SMALLER IN 6"-8" LIFTS) TO 95% OF THE MAXIMUM DRY DENSITY DETERMINED BY THE STD. PROCTORTEST, ASTM D698 WITH MOISTURE CONTENT OF THE FILL AT THE TIME OF COMPACTION TO BE NEAR OPTIMUM OR 4% ABOVE PROCTOR OPTIMUM VALUE.
7. CONCRETE FOR PAVING REPAIRS SHALL BE MADE WITH A MINIMUM OF 6 1/2 SACKS OF CEMENT AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS.
8. ALL REINFORCING STEEL SHALL BE NEW, NEAT, BILLET-STEEL PER ASTM DESIGNATION A-615, GRADE 60, AND SHALL BE DETAILED AND PLACED PER ACI MANUALS SP-88 AND 318, LATEST ADDITIONS. ALL REINFORCING STEEL SHALL HAVE MINIMUM 15 INCH LAP SPLICES, UNLESS NOTED OTHERWISE ON THE PLANS.
9. THE CONTRACTOR SHALL USE A LIQUID MEMBRANE-FORMING CURING COMPOUND PER N.C.T.C.O.G. ITEM ITEM 303.2.12.1.1.

NOTE:
CRUSHED STONE SHALL BE USED TO REPLACE SOFT, SPONGY OR OTHERWISE UNSUITABLE MATERIAL AT PIPE GRADE.

NOTE:
SAWCUT TO REPAIR ASPHALT OR CONCRETE PAVEMENT PRIOR TO OPENING THE DITCH IN ORDER TO ENSURE A NEAT STRAIGHT EDGE.

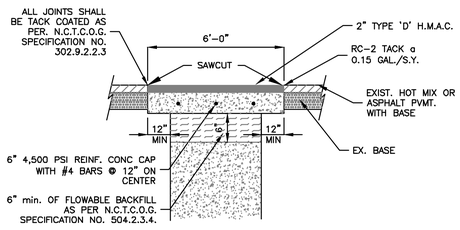
TABLE OF DIMENSIONS FOR WIDTH OF TRENCH AND PAVEMENT REPLACEMENT

NORMAL SIZE OF PIPE IN INCHES	O.D. OF PIPE BELL IN INCHES (PVC-DR18)		MINIMUM TRENCH WALL CLEARANCE "A" IN INCHES		WIDTH OF TRENCH ('X') MAXIMUM IN INCHES (NOTE 5)	WIDTH OF TRENCH ('X') MINIMUM IN INCHES (NOTE 5)	WIDTH OF PVMT. REPLACEMENT (NOTE 4) ('W') CONC. & ASPHALT (NOTE 5)
6	6.9	6	24	19	48		
8	9.05	6	24	21	48		
10	11.10	6	28	24	48		
12	13.20	6	30	26	50		
16+	VARIES		8		(NOTE 4)	(NOTE 4)	(NOTE 4)

PAVEMENT BACKFILL & REPAIR FOR WATER

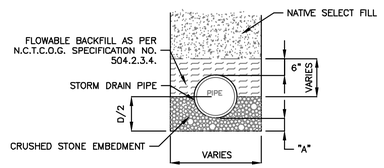
N.T.S.

GENERAL:
A. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE CITY OF GRAND PRAIRIE, WHICH HAS ALSO ADOPTED THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION – NORTH CENTRAL TEXAS HEREIN REFERRED TO AS N.C.T.C.O.G. SPECIFICATIONS. COPIES MAY BE OBTAINED FROM THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 616 SIX FLAGS DRIVE, SUITE 200, ARLINGTON, TEXAS 76005-5888. (817) 640-3300. THESE SPECIFICATIONS ARE ALSO AVAILABLE AT WWW.PUBLICWORKS.DFWINFO.COM
B. FLOWABLE BACKFILL (REFER TO N.C.T.C.O.G. ITEM: 504.2.3.4.): FLOWABLE BACKFILL SHALL CONSIST OF A MIXTURE OF NATIVE SOILS OR MANUFACTURED MATERIALS, CEMENT AND/OR FLY ASH, AND WATER WHICH PRODUCES A MATERIAL WITH UNCONFINED COMPRESSIVE STRENGTH OF BETWEEN 250-PSI AND 450-PSI (18-TO 32-KG/CM^2) AFTER 28-DAYS. ANY MATERIALS USED SHALL BE PRIMARILY GRANULAR WITH A PLASTICITY INDEX <12 AND WITH 100% PASSING A 3/4-IN. SIEVE THE FLOWABLE MIXTURE SHALL BE MIXED IN A PUG MILL, CONCRETE MIXER OR TRANSIT MIXER AND SHALL HAVE A MINIMUM SLUMP OF 5-IN. (13CM). THE FLOWABLE MIXTURE MUST BE ALLOWED TO SET PRIOR TO THE PLACEMENT OF AND OVERLYING MATERIAL.
C. MODIFIED FLOWABLE FILL (REFER TO N.C.T.C.O.G. ITEM 504.2.3.5): MODIFIED FLOWABLE BACKFILL IN AREAS OF POSSIBLE FUTURE EXCAVATION SUCH AS UTILITY INSTALLATIONS SHALL CONSIST OF A MIXTURE OF NATIVE SOILS OR MANUFACTURED MATERIALS, CEMENT AND/OR FLY ASH, AIR-ENTRAINING MATERIAL, AND WATER WHICH PRODUCES A MATERIAL WITH UNCONFINED COMPRESSIVE STRENGTH OF BETWEEN 50-PSI AND 150-PSI (4 TO 11-KG/CM2) AFTER 28 DAYS. MODIFIED FLOWABLE BACKFILL IN PAVEMENT AREAS SUCH AS ABANDONED PIPE CLOSURES, ABUTMENTS AND EMBANKMENTS SHALL CONTAIN SIMILAR MATERIALS AND SHALL HAVE AN UNCONFINED COMPRESSIVE STRENGTH OF GREATER THAN 150-PSI (11-KG/CM2) AFTER 28 DAYS. ANY MATERIALS USED SHALL BE PRIMARILY GRANULAR WITH A PLASTICITY INDEX OF <12 AND WITH 100% PASSING A ¾ IN. SIEVE. THE FLOWABLE MIXTURE SHALL BE MIXED IN A PUG MIL, CONCRETE MIXER, OR TRANSIT MIXER AND SHALL HAVE A MINIMUM SLUMP OF 5 IN. (13 CM). THE FLOWABLE MIXTURE MUST BE ALLOWED TO SET PRIOR TO THE PLACEMENT OF ANY OVERLYING MATERIAL. REFER TO N.C.T.C.O.G. ITEM 504.2.3.5 FOR ADDITIONAL INFORMATION.
D. 1/4"-3/4" WELL GRADED CRUSHED STONE MAY BE EQUIVALENT TO ASTM D448 SIZE NUMBER 57.



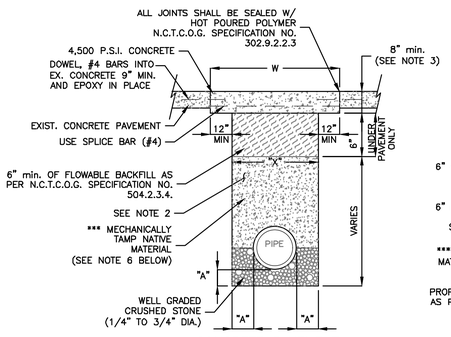
ASPHALT PAVING REPAIR FOR WASTEWATER AND STORM DRAIN PIPES

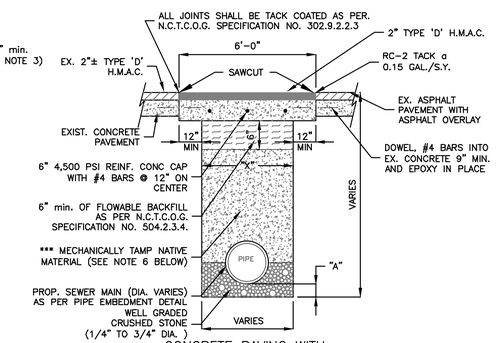
N.T.S.



FLOWABLE BACKFILL FOR STORM DRAIN PIPES EXCEEDING 10% SLOPES

N.T.S.





NOTES:
1. FULL-DEPTH SAWCUT TO REPAIR ASPHALT OR CONCRETE PAVEMENT PRIOR TO OPENING THE DITCH IN ORDER TO ENSURE A NEAT STRAIGHT EDGE.
2. MODIFIED FLOWABLE BACKFILL MAY BE UTILIZED IN-LIEU OF NATIVE MATERIAL.
3. DEPTH OF CONCRETE REPAIR SHALL MATCH EXISTING PAVING DEPTH OR 8" MINIMUM.
4. REFER TO THE PLANS FOR SPECIFIED WIDTH OF REPLACEMENT.
5. RECOMMENDED WIDTHS – VARIES BASED ON DEPTH, AND SOIL MATERIAL.
6. MECHANICALLY TAMP NATIVE MATERIAL (6"ø CLODS OR SMALLER IN 6"-8" LIFTS) TO 95% OF THE MAXIMUM DRY DENSITY DETERMINED BY THE STD. PROCTORTEST, ASTM D698 WITH MOISTURE CONTENT OF THE FILL AT THE TIME OF COMPACTION TO BE NEAR OPTIMUM OR 4% ABOVE PROCTOR OPTIMUM VALUE.
7. CONCRETE FOR PAVING REPAIRS SHALL BE MADE WITH A MINIMUM OF 6 1/2 SACKS OF CEMENT AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS.
8. ALL REINFORCING STEEL SHALL BE NEW, NEAT, BILLET-STEEL PER ASTM DESIGNATION A-615, GRADE 60, AND SHALL BE DETAILED AND PLACED PER ACI MANUALS SP-88 AND 318, LATEST ADDITIONS. ALL REINFORCING STEEL SHALL HAVE MINIMUM 15 INCH LAP SPLICES, UNLESS NOTED OTHERWISE ON THE PLANS.
9. THE CONTRACTOR SHALL USE A LIQUID MEMBRANE-FORMING CURING COMPOUND PER N.C.T.C.O.G. ITEM ITEM 303.2.12.1.1.
10. STORM DRAIN PIPES AND CULVERTS WITH SLOPES EXCEEDING 10% SHALL BE BACKFILLED WITH FLOWABLE FILL MATERIAL BETWEEN SPRING LINE AND 6" (INCHES) ABOVE THE STORM DRAIN PIPE.

TABLE OF DIMENSIONS FOR WIDTH OF TRENCH AND PAVEMENT REPLACEMENT

NORMAL SIZE OF PIPE IN INCHES	O.D. OF PIPE BELL IN INCHES CLASS III R.C.P.		MINIMUM TRENCH WALL CLEARANCE "A" IN INCHES		WIDTH OF TRENCH ('X') MAXIMUM IN INCHES (NOTE 5)	WIDTH OF TRENCH ('X') MINIMUM IN INCHES (NOTE 5)	WIDTH OF PVMT. REPLACEMENT (NOTE 4) ('W') CONC. & ASPHALT (NOTE 5)
18	22.5	6	48	36	60		
24	29.0	6	48	42	60		
30	35.5	6	52	48	72		
36	42.5	6	61	55	72		
42	49.75	6	68	62	86		
48	56.5	8	75	69	93		
54	63.25	8	82	76	100		
60	70.5	8	89	83	107		
66	77.5	8	96	90	114		
72	84.5	8	103	97	121		
72+	VARIES	8	(NOTE 4)		(NOTE 4)	(NOTE 4)	

PAVEMENT BACKFILL & REPAIR FOR STORM DRAIN

N.T.S.

CERTIFICATION:
THIS CITY OF GRAND PRAIRIE STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM THE CITY OF GRAND PRAIRIE.

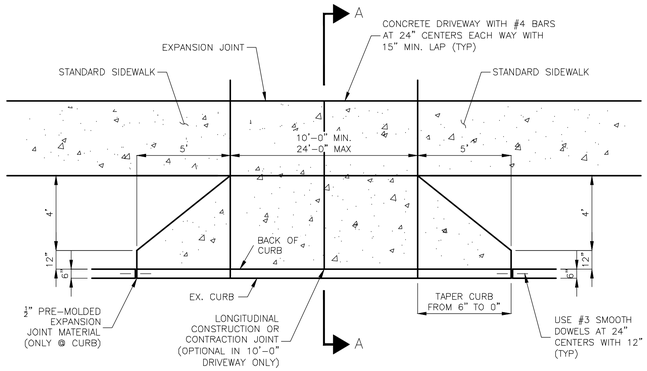
STATE OF TEXAS
MATT MOORE
95813
LICENSED
PROFESSIONAL ENGINEER
03/28/2016

C-15

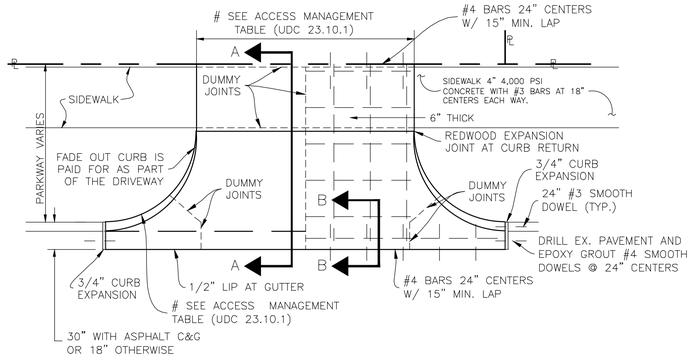
PAVEMENT & BACKFILL TRENCH REPAIRS STANDARD DETAILS

GRand PRaiRie TEXAS
ENGINEERING

DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
G.F.	JP	GF	NOV. 2015	N.T.S.		

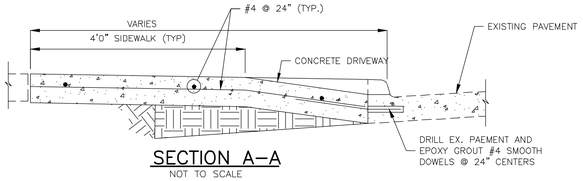


RESIDENTIAL DRIVEWAY DETAIL



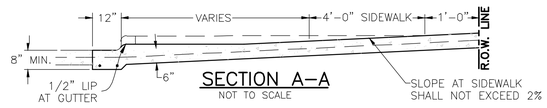
COMMERCIAL DRIVEWAY DETAIL

NOTE:
1. SIDEWALK SECTION THROUGH DRIVEWAY SHALL BE POURED SAME THICKNESS AND STEEL REINFORCEMENT AS DRIVEWAY APPROACH (EXISTING SIDEWALK, IF ANY, SHALL BE REMOVED)
2. NEW COMMERCIAL DRIVEWAYS SHALL HAVE A MAXIMUM GRADE NOT TO EXCEED 10%. NEW COMMERCIAL DRIVEWAYS SHALL HAVE A MAXIMUM GRADE NOT TO EXCEED 6%.

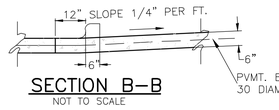


SECTION A–A
NOT TO SCALE

NOTES:
1. SIDEWALK SECTION THROUGH DRIVEWAY SHALL BE PORED SAME THICKNESS AND STEEL REINFORCEMENT AS DRIVEWAY APPROACH (EXISTING SIDEWALK, IF ANY, SHALL BE REMOVED)
2. DRIVEWAY APPROACH THICKNESS SHALL BE A MINIMUM OF 6" (SIX INCHES)
3. DRIVEWAYS CONSTRUCTED ON PRIVATE PROPERTY SHALL TAPER AT A 1:1 RATIO TO INTERSECT APPROACH AT PROPERTY LINE NO GREATER THAN 24' WIDTH.
4. NEW RESIDENTIAL DRIVEWAYS SHALL HAVE A MAXIMUM GRADE NOT TO EXCEED 10%. NEW COMMERCIAL DRIVEWAYS SHALL HAVE A MAXIMUM GRADE NOT TO EXCEED 6%.



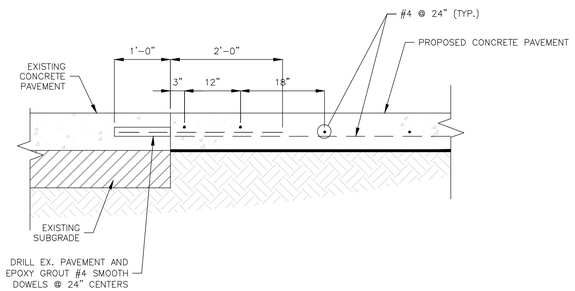
SECTION A–A
NOT TO SCALE



SECTION B–B
NOT TO SCALE

NOTE: CURB, GUTTER, PAVEMENT, AND VALLEY TO BE POURED MONOLITHIC THE REINFORCED CONCRETE VALLEY SHALL REPLACE THE CONCRETE PAVING WITH THE SUBGRADE AND BASE TREATMENT REMAINING THE SAME IN ACCORDANCE WITH THE TYPICAL PAVING SECTION. DO NOT DOWEL IN NEW CONCRETE DRIVES INTO EXISTING ASPHALT ROADS. UTILIZE MODIFIED TYPE-A CONCRETE HEADER.

# ACCESS MANAGEMENT TABLE (UDC 23.10.1)					
		LOCAL	COLLECTOR	MINOR ARTERIAL	PRINCIPAL ARTERIAL
RESIDENTIAL DRIVEWAY	THROAT WIDTH	15-28 ft.	15-28 ft.	N/A	N/A
	CURB RADIUS	N/A	N/A	N/A	N/A
INDUSTRIAL DRIVEWAY	THROAT WIDTH	40 ft.	40-60 ft.*	40-60 ft.*	40-60 ft.*
	CURB RADIUS	30 ft.	40 ft.	40 ft.	40 ft.
COMMERCIAL DRIVEWAY	THROAT WIDTH	30-40 ft.	30-40 ft.	30-40 ft.	30-40 ft.
	CURB RADIUS	20 ft.	25 ft.	30 ft.	35 ft.



PROPOSED PAVING CONECTION TO EXISTING PAVEMENT

NOT TO SCALE

NOTE:
NEW RESIDENTIAL DRIVEWAYS SHALL BE 15' (MIN.) WIDTH; EXISTING RESIDENTIAL DRIVEWAY APPROACHES SHALL NOT BE RECONSTRUCTED TO LESS THAN 9' WIDTH. CURB RETURNS FOR NEW DRIVES SHALL BE CONSTRUCTED TO 5' B.O.C., IN REPLACING EXISTING DRIVES, THE EXISTING DRIVE SHALL BE SAWED AND REMOVED AT A DISTANCE WHICH WILL ASSURE A SMOOTH GRADE, (TO BE SPECIFIED BY THE ENGINEER) AND WILL BE REPLACED TO THAT POINT. NEW RESIDENTIAL DRIVEWAYS SHALL HAVE A MAXIMUM GRADE NOT TO EXCEED 10%. NEW COMMERCIAL DRIVEWAYS SHALL HAVE A MAXIMUM GRADE NOT TO EXCEED 6%.

P.C. CONCRETE STANDARD RESIDENTIAL, COMMERCIAL & INDUSTRIAL STREETS

GENERAL:
(A) ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE CITY OF GRAND PRAIRIE, WHICH HAS ALSO ADOPTED THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION – NORTH CENTRAL TEXAS" HEREIN REFERRED TO AS "N.C.T.C.O.G." SPECIFICATIONS. COPIES MAY BE OBTAINED FROM THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 616 SIX FLAGS DRIVE, SUITE 200, ARLINGTON, TEXAS 76005–5888 (817)640–3300. THESE SPECIFICATIONS ARE ALSO AVAILABLE AT WWW.PUBLICWORKS.DFWINFO.COM
(B) ALSO REFER TO N.C.T.C.O.G. ITEM 303 SPECIFICATIONS
(C) THERE SHALL BE NO LEAVE OUTS FOR UTILITY ADJUSTMENTS; ALL MANHOLE, VALVE SETS ETC. SHALL BE CONSTRUCTED TO FINAL GRADE PRIOR TO PAVING.
(D) MEDIANS AND PARKWAYS SHALL BE SODDED. (NO SEEDING)
(E) CONTRACTOR SHALL CONTACT TRANSPORTATION DEPARTMENT FOR THE REMOVAL OF CITY SIGNS IN RIGHT–OF–WAY.

SUBGRADE PREPARATION:
PLEASE REFER TO ITEM 301 OF THE N.C.T.C.O.G. SPECIFICATIONS.

LIME STABILIZED SUBGRADE:
(A) PLEASE REFER TO ITEM 301.2 OF THE N.C.T.C.O.G. SPECIFICATIONS. LIME SHALL BE PLACED USING THE SLURRY METHOD, MAY BE MIXED ON–SITE OR TRUCKED IN. PLEASE REFER N.C.T.C.O.G. ITEM 301.2.3.4.2.
(B) SEE CITY OF GRAND PRAIRIE STANDARD GENERAL TESTING REQUIREMENTS FOR WATER, WASTEWATER, STORM DRAIN, AND PAVEMENT CONSTRUCTION.

FORMS:
PLEASE REFER TO N.C.T.C.O.G. ITEM 303.4.4

REINFORCEMENT BARS:
ONLY STEEL RODS SHALL BE USED. PLEASE REFER TO ITEM 303.2.9 OF THE N.C.T.C.O.G. SPECIFICATIONS.

REINFORCEMENT BAR CHAIRS:
THE CONTRACTOR SHALL INSTALL SUPPORTING CHAIRS FOR REINFORCING STEEL ON A ONE SQUARE YARD SPACING IN ALL CONCRETE PAVEMENTS. THE CHAIRS ARE TO BE PLASTIC AND INSTALLED AS PER ITEM 303.2.11 OF THE N.C.T.C.O.G. SPECIFICATIONS.

CONCRETE:
(A) PORTLAND CEMENT SHALL BE AS PER N.C.T.C.O.G. ITEM 303.2.2
(B) UP–TO 20% (BY WEIGHT) OF THE CEMENT CONTENT MAY BE REPLACED WITH TYPE C FLY ASH. FLY ASH REPLACEMENT SHALL BE 1.25 POUNDS PER 1.0 POUND OF CEMENT REDUCTION. ALSO REFER TO N.C.T.C.O.G. ITEM 303.2.4
(C) AGGREGATES SHALL BE AS PER N.C.T.C.O.G. ITEM 303.2.1. RIVER ROCK OR BLENDED AGGREGATES SHALL NOT BE ALLOWED.
(D) CONCRETE FOR ALL PAVING AND CURBS WITHIN THE RIGHT–OF–WAY SHALL HAVE A MINIMUM 5 1/2 SACK/CUBIC YARD OF CEMENT CONTENT AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI WHEN TESTED AT THE AGE OF 28 DAYS. HAND PLACED CONCRETE SHALL HAVE A MINIMUM 6 1/2 SACK/CUBIC YARD OF CEMENT CONTENT AND MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI.
(E) THE DESIGN ENGINEER SHALL APPROVE THE CONCRETE MIX DESIGN IN WRITING PRIOR TO USE.
(F) PAVEMENT CURBS SHALL BE POURED MONOLITHICALLY. PLEASE REFER TO N.C.T.C.O.G. ITEM. 303.5.2.4.
(G) STAMP OR DIE PROJECT PAVING LIMITS INCLUDING ALL STREET INTERSECTIONS TO N.C.T.C.O.G. ITEM. 303.4.2.3 AND DETAIL ON THIS SHEET.
(H) ALL MINIMUM SPECIFICATIONS IN TERMS OF SPECIFIED CONCRETE STRENGTH AND DEPTH SHALL BE MET. NO VARIANCES ARE ALLOWED. ANY AREAS OF DEFICIENCY SHALL BE PROVED REMOVED AND REPLACED.
(I) ALL CURBS AND GUTTERS SHALL BE POURED IN ONE COURSE. CONSTRUCTION CONCRETE SHALL BE PLACED IN FORMS ON COMPACTED, WETTED SUBGRADE, AND SHALL BE TAMPED AND SPADED UNTIL MORTAR COVERS THE ENTIRE SURFACE. TAMPING AND SPADING OF NEWLY POURED CONCRETE SHALL BE GIVEN SPECIAL ATTENTION TO ENSURE ADEQUATE COMPACTION AND SURFACES FREE OF HONEYCOMBS.

CURING:
(A) PLEASE REFER TO ITEM 303.5.8 AND 303.2.12.1.1 OF THE N.C.T.C.O.G. SPECIFICATIONS.
(B) THE CONTRACTOR SHALL USE A WHITE PIGMENTED LIQUID CURING COMPOUND AS PER N.C.T.C.O.G. ITEM 303.5.8. AND 303.2.12.1.1

TOLERANCE:
PLEASE REFER TO ITEM 303.5.6.1.1 OF THE N.C.T.C.O.G. SPECIFICATIONS.

JOINTS:
(A) CONSTRUCTION JOINTS SHALL BE USED IN ALL BLOCK–OUTS FOR DRIVEWAYS, INLETS, ETC.
(B) TRANSVERSE JOINTS SHALL BE SAWED ON 15' CENTERS. THE CONCRETE SAW MUST BE STATIONED ON THE JOB–SITE PRIOR TO PLACING THE PAVEMENTS. ALL JOINTS SHALL BE SAWED WITHIN AN EIGHTEEN (18) HOUR PERIOD FROM THE TIME OF THE POUR.
(C) LONGITUDINAL JOINTS SHALL BE SAWED BASED ON THE FOLLOWING:
25' WIDTH (BLVD.) SAW JOINT 3" FROM THE CENTER
27' " SAW JOINT ALONG THE CENTER
31' " SAW JOINT ALONG THE CENTER
37' " TWO EVENLY SPACED JOINTS
OVER 37' WIDTH MINIMUM TWO JOINTS – OUTSIDE JOINTS SAWED AT 12'–6" MAX.
(D) SAW JOINTS TO BE 1/4" FOR EACH 1" OF PAVEMENT THICKNESS.
6" PAVEMENT = 1 1/2",
7" PAVEMENT = 1 3/4",
8" PAVEMENT = 2", ETC.

TESTING:
1.) PLEASE REFER TO THE STANDARD GENERAL TESTING REQUIREMENTS FOR WATER, WASTEWATER, STORM DRAIN AND PAVEMENT CONSTRUCTION DETAIL SHEET.
2.) THE CITY WILL PROVIDE BACKFILL, DENSITY AND CONCRETE TESTING FOR ALL PROJECTS UNLESS SPECIFIED OTHERWISE. ALL REPORTS SHALL BE TURNED INTO THE INSPECTOR WITHIN FIVE WORKING DAYS.
3.) MATERIAL: ALL MATERIAL INCORPORATED IN THE CONSTRUCTION SHALL BE NEW.

PRIVATE DEVELOPMENT PROJECTS: THE DEVELOPER/OWNER SHALL PROVIDE ESCROW FUNDS FOR GEOTECHNICAL AND MATERIAL TESTING AS PER CITY ORDINANCE #7951 FOR BACKFILL, DENSITY AND CONCRETE TESTING PRIOR TO BEGINNING ANY CONSTRUCTION.

CERTIFICATION:
THIS CITY OF GRAND PRAIRIE STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM THE CITY OF GRAND PRAIRIE.

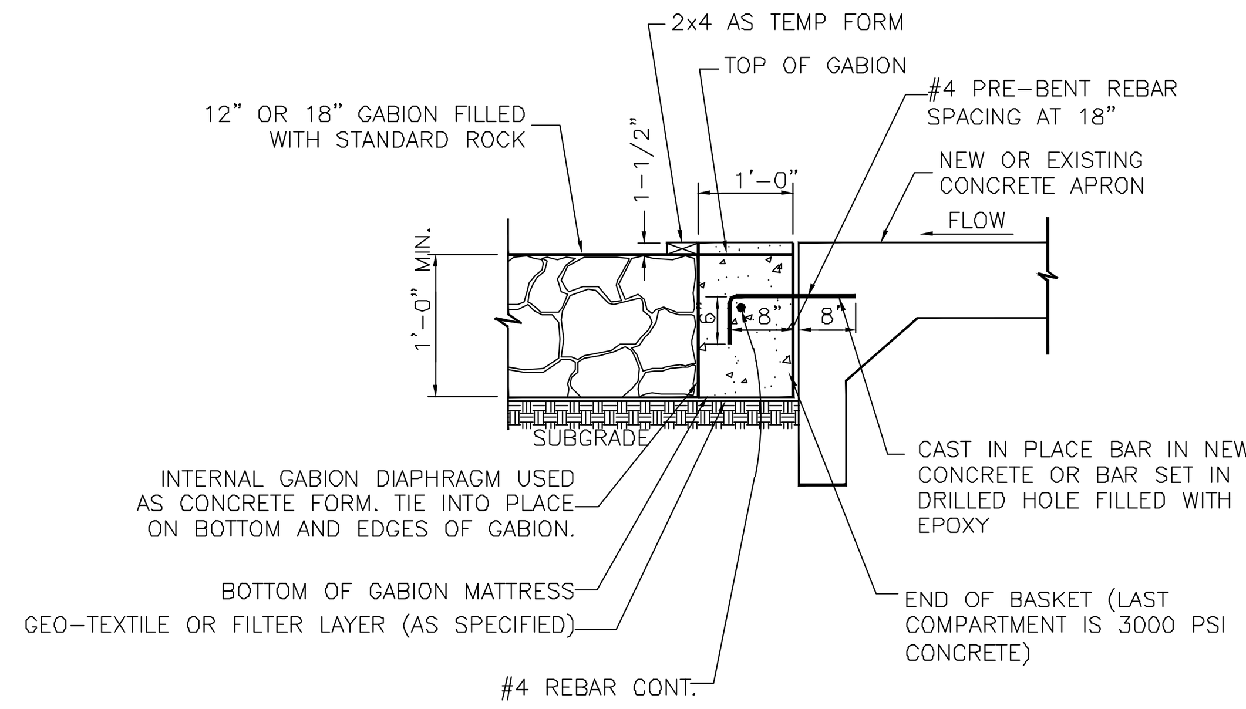
STATE OF TEXAS
MATT MOORE
95813
LICENSED
PROFESSIONAL ENGINEER
03/28/2016

C-16

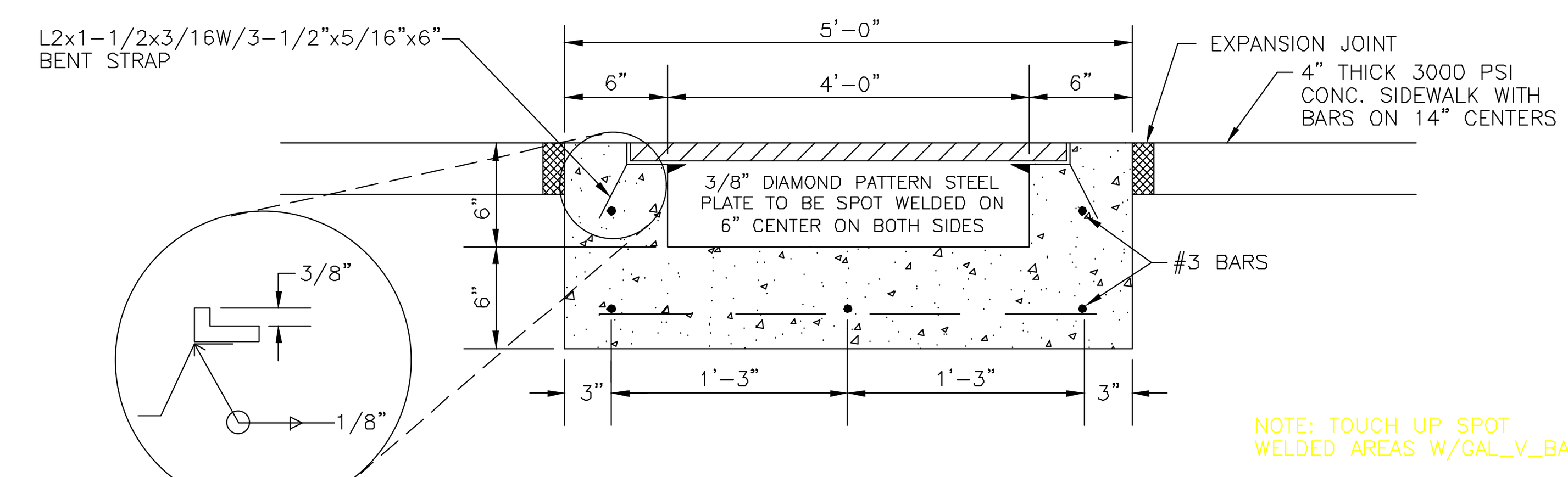
CONCRETE DRIVEWAY
STANDARD DETAILS

Grand Prairie TEXAS
ENGINEERING

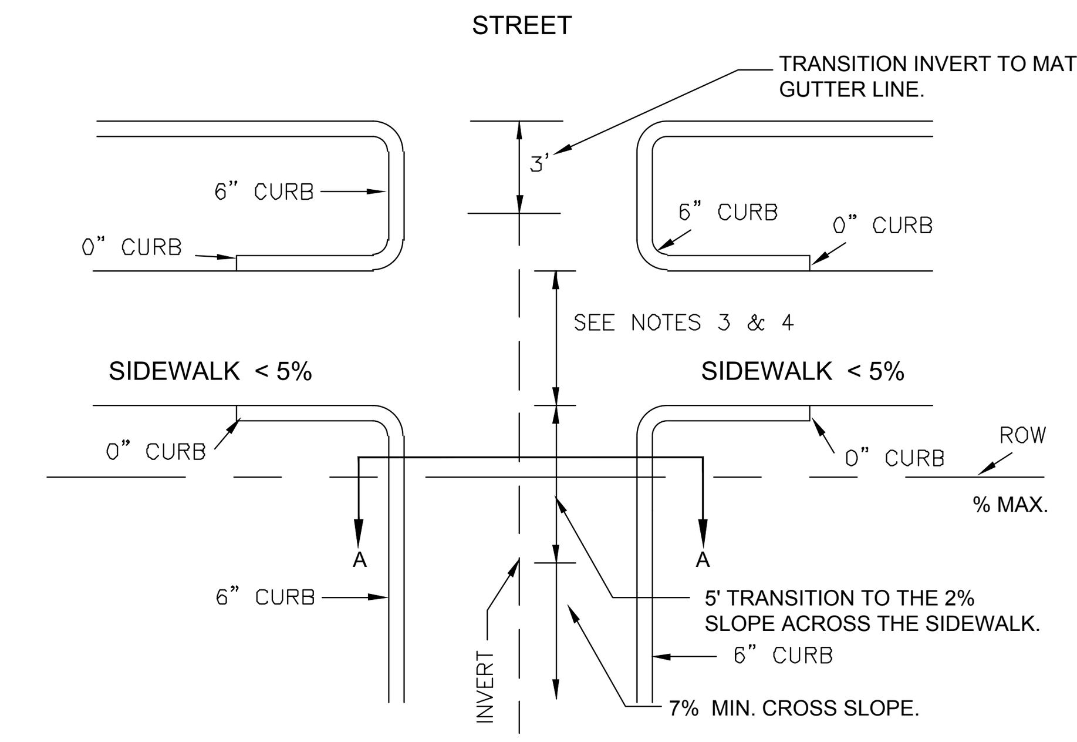
DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
G.F.	J.P.	R.A.K.	NOV. 2015	N.T.S.		



GABION MATTRESS TO CONCRETE ATTACHMENT DETAIL
NTS



FLUME AND STEEL PLATE DETAIL

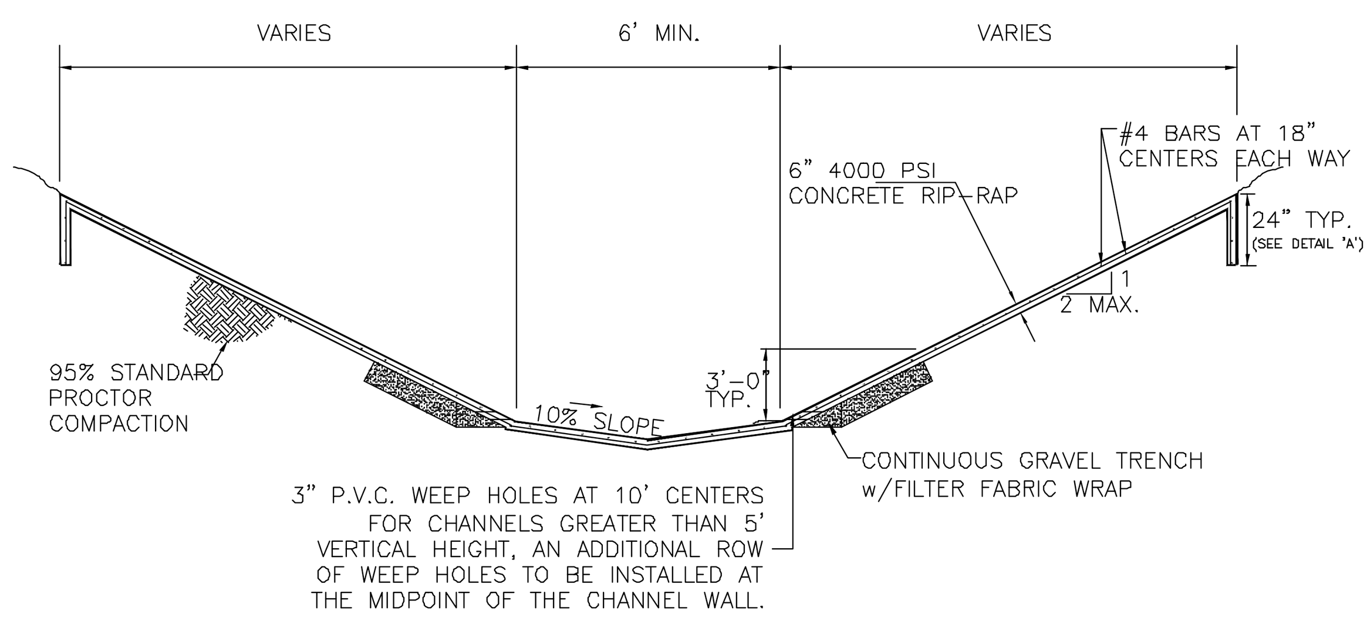


Note:
1. FLOW IS TOWARD STREET, OTHERWISE THE FLUME WILL HAVE TO BE FLARED AT THE STREET.
2. FOR FLUMES 5 FEET OR LESS IN WIDTH A METAL PLATE MAY BE CONSIDERED FOR UNIQUE SITUATIONS IF AUTHORIZED BY THE PUBLIC WORKS DEPARTMENT.
3. LONGITUDINAL FLUME SLOPE ACROSS SIDEWALK MUST BE NO GREATER THAN 2%.
4. THE TRANSVERSE SLOPE OF THE FLUME AT THE SIDEWALK MUST BE LESS THAN 5%.
5. ALL CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4000 PSI. AT 28 DAYS.
6. ALL STEEL SHALL BE ASTM A36.

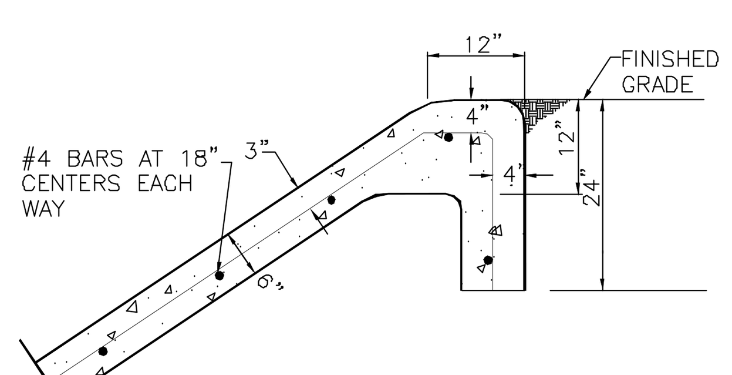
FLUME WITH SIDEWALK CROSSING
NTS

GENERAL NOTES:

(A) ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE CITY OF GRAND PRAIRIE, WHICH HAS ALSO ADOPTED THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION – NORTH CENTRAL TEXAS HEREIN REFERRED TO AS N.C.T.C.O.G. SPECIFICATIONS. COPIES MAY BE OBTAINED FROM THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 616 SIX FLAGS DRIVE, SUITE 200, ARLINGTON, TEXAS 76005–5888. (817) 640–3300. THESE SPECIFICATIONS ARE ALSO AVAILABLE AT WWW.PUBLICWORKS.DFWINFO.COM
(B) ALL MANHOLES SHALL BE POURED IN PLACE. PRECAST JUNCTION BOXES OR MANHOLES ARE NOT ALLOWED UNLESS SHOP DRAWINGS ARE PRE–APPROVED BY THE CITY ENGINEER.
(C) CONCRETE SHALL BE MADE WITH A MINIMUM OF 5 1/2 SACKS OF CEMENT AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.
(D) ALL REINFORCING STEEL SHALL BE NEW, NEAT, BILLET–STEEL PER ASTM DESIGNATION A–615, GRADE 60, AND SHALL BE DETAILED AND PLACED PER ACI MANUALS SP–88 AND 318, LATEST ADDITIONS. ALL REINFORCING STEEL SHALL HAVE MINIMUM 15 INCH LAP SPLICES, UNLESS NOTED OTHERWISE ON THE PLANS.
(E) THE CONTRACTOR SHALL USE A LIQUID MEMBRANE–FORMING CURING COMPOUND PER N.C.T.C.O.G. ITEM 2.2.11(1).
(F) LIGHT BROOM FINISH REQUIRED ON ALL EXPOSED MANHOLE TOPS.
(G) MANHOLE FRAME AND COVER SHALL BE INSTALLED AS PER THE DETAILS ON THIS SHEET.
(H) STACKED MANHOLE EXTENSION SHALL BE INSTALLED, WHERE SPECIFIED ON THE PLANS AND AS PER THE DETAILS ON THIS SHEET.
(I) MANHOLES SHALL BE CONSTRUCTED PER DETAILS ON THIS SHEET AND N.C.T.C.O.G. ITEM 6.7.4.1
(J) SOIL TESTING TECHNICIAN MUST PROVIDE WRITTEN PROOF OF 18–24 MONTHS OF RELATED FIELD EXPERIENCE.
(K) PREFABRICATED ROUND MANHOLES SHALL CONFORM TO ASTM C478 SPECIFICATIONS.
(L) PREFABRICATED SQUARE MANHOLES SHALL CONFORM TO ASTM C890 AND ASTM C913 SPECIFICATIONS.
(M) ALL UTILITY DITCH LINES WITHIN CITY R.O.W. OR EASEMENT SHALL BE TESTED AT A FREQUENCY OF ONE DENSITY PER 6"–8" LIFTS (NOT TO EXCEED 12") AT STAGGERED 100' INTERVALS. ALL LATERALS OR SERVICES SHALL HAVE A MINIMUM OF ONE DENSITY TEST PER FOOT OF LIFT. THE INSPECTOR SHALL HAVE THE RIGHT TO REQUEST ADDITIONAL RANDOM TESTS AS HE/SHE DEEMS NECESSARY.
(N) ALL MATERIAL INCORPORATED IN THE CONSTRUCTION SHALL BE NEW.
(O) CONTRACTOR SHALL CONTACT TRANSPORTATION DEPARTMENT FOR THE REMOVAL OF CITY SIGNS IN RIGHT–OF–WAY.
(P) PLEASE REFER TO THE STANDARD GENERAL TESTING REQUIREMENTS FOR WATER, WASTEWATER, STORM DRAIN AND PAVEMENT CONSTRUCTION DETAIL SHEET.
(Q) THE CITY WILL PROVIDE BACKFILL, DENSITY AND CONCRETE TESTING FOR ALL PROJECTS UNLESS SPECIFIED OTHERWISE. ALL REPORTS SHALL BE TURNED INTO THE INSPECTOR WITHIN FIVE (5) WORKING DAYS.
(R) PRIVATE DEVELOPMENT PROJECTS: THE DEVELOPER/OWNER SHALL PROVIDE ESCROW FUNDS FOR GEOTECHNICAL AND MATERIAL TESTING AS PER CITY ORDINANCE #7951 FOR BACKFILL, DENSITY AND CONCRETE TESTING PRIOR TO BEGINNING ANY CONSTRUCTION.



CONCRETE CHANNEL
LESS THAN 8 VERTICAL FEET IN HEIGHT
NTS



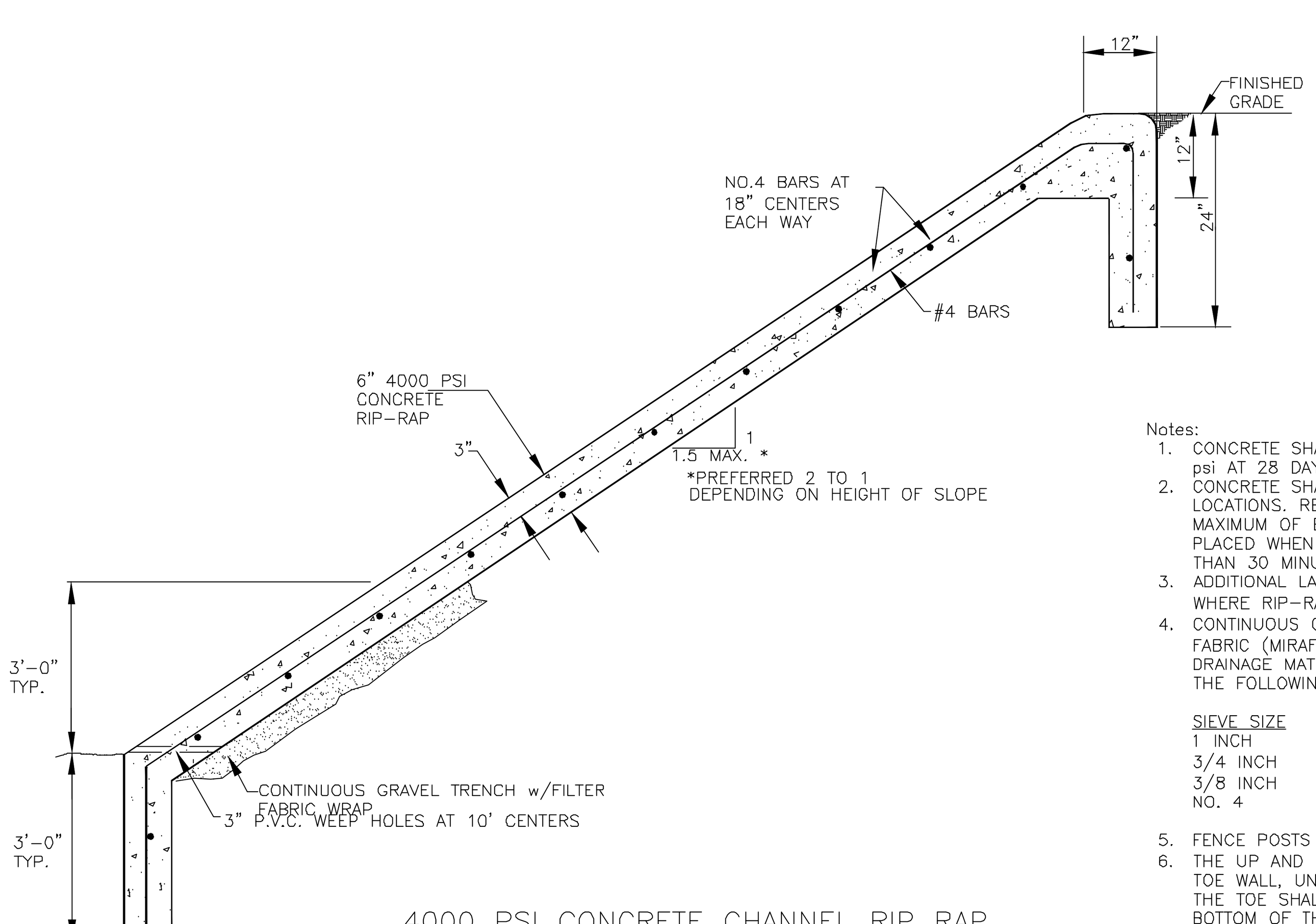
DETAIL "A"
(HEADER BEAM)
NTS

CONCRETE CHANNEL
LESS THAN 8 VERTICAL FEET IN HEIGHT
NTS

Notes:
1. CONCRETE SHALL HAVE COMPRESSIVE STRENGTH OF 4,000 psi AT 28 DAYS.
2. CONCRETE SHALL HAVE TRANSVERSE JOINTS AT WEEP HOLE LOCATIONS. REDWOOD EXPANSION JOINTS ARE REQUIRED A MAXIMUM OF EVERY 200 FEET. CONSTRUCTION JOINTS PLACED WHEN PAVING OPERATION HAS CEASED FOR MORE THAN 30 MINUTES.
3. ADDITIONAL LAYER OF WEEP HOLES SHALL BE REQUIRED WHERE RIP-RAP IS GREATER THAN 5' VERTICAL HEIGHT.
4. CONTINUOUS GRAVEL TRENCH 6' THICK WRAPPED IN FILTER FABRIC (MIRAFI 140 NS OR FUNCTIONAL EQUIVALENT). DRAINAGE MATERIAL TO CONSIST OF GRAVEL GRADED WITHIN THE FOLLOWING LIMITS:

SIEVE SIZE	% BY WEIGHT PASSING
1 INCH	100
3/4 INCH	90-100
3/8 INCH	20-55
NO. 4	0-5

5. FENCE POSTS ARE NOT PERMITTED IN THE CONCRETE.
6. THE UP AND DOWNSTREAM ENDS SHALL HAVE A 3' DEEP TOE WALL, UNLESS CONNECTING TO ANOTHER STRUCTURE. THE TOE SHALL EXTEND FROM TOP OF BANK TO THE BOTTOM OF THE RIP RAP.
7. ALL STEEL SHALL BE ASTM A36



4000 PSI CONCRETE CHANNEL RIP RAP
NTS

Notes:
1. CONCRETE SHALL HAVE COMPRESSIVE STRENGTH OF 4,000 psi AT 28 DAYS.
2. CONCRETE SHALL HAVE TRANSVERSE JOINTS AT WEEP HOLE LOCATIONS. REDWOOD EXPANSION JOINTS ARE REQUIRED A MAXIMUM OF EVERY 200 FEET. CONSTRUCTION JOINTS PLACED WHEN PAVING OPERATION HAS CEASED FOR MORE THAN 30 MINUTES.
3. ADDITIONAL LAYER OF WEEP HOLES SHALL BE REQUIRED WHERE RIP-RAP IS GREATER THAN 5' VERTICAL HEIGHT.
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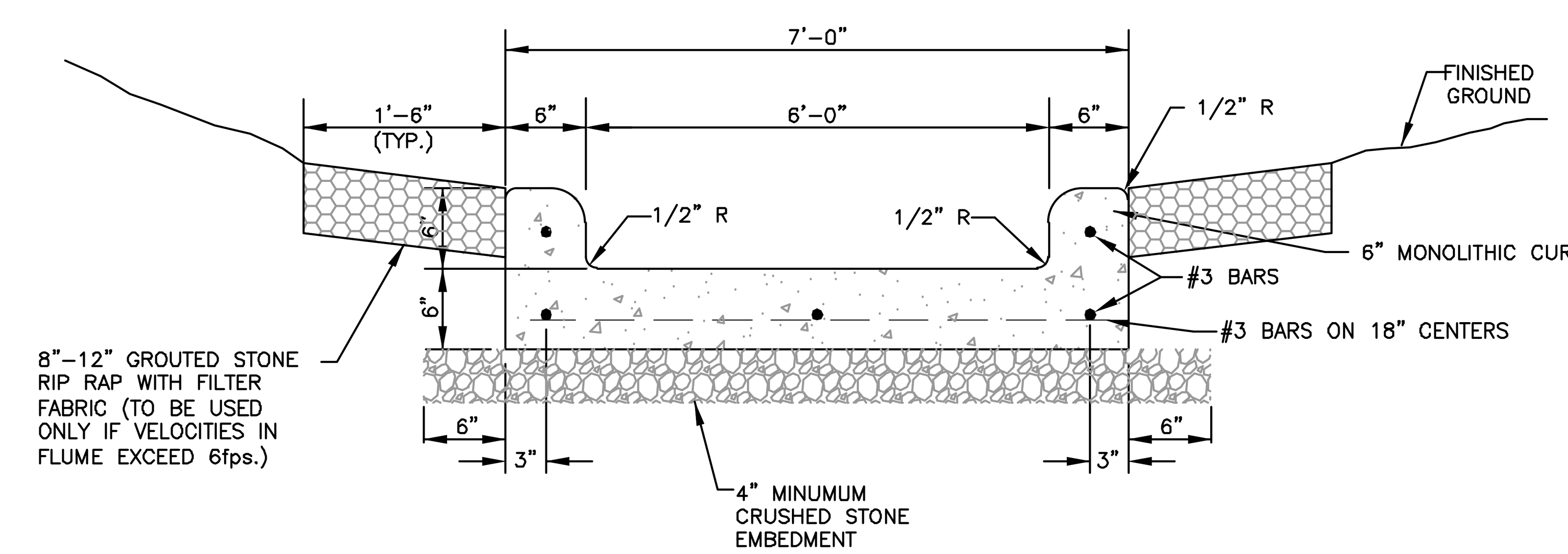
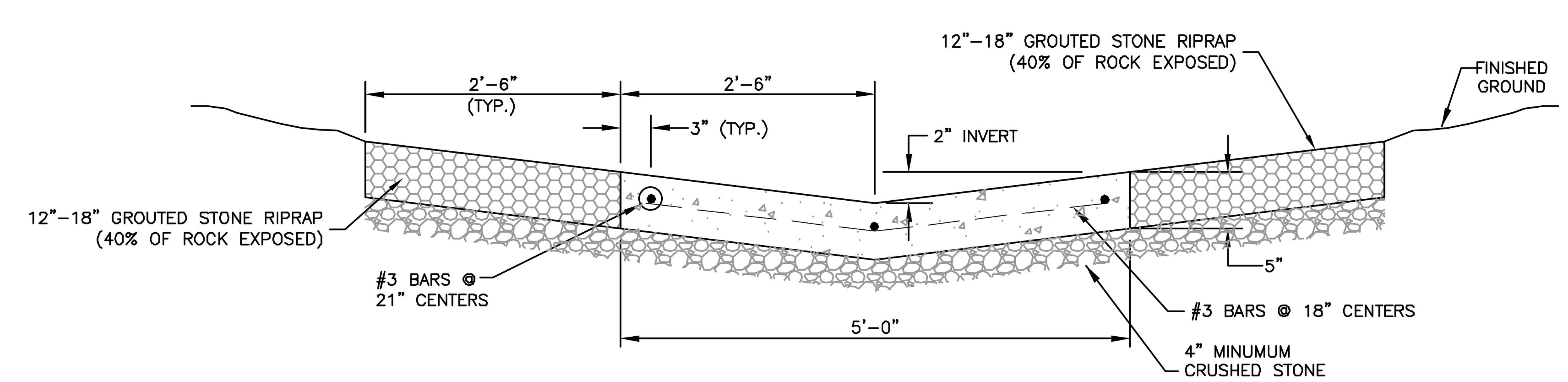
7. ALL STEEL SHALL BE ASTM A36

NOTE:
1. ALL CONCRETE SHALL BE 4000 PSI AT 28 DAYS.
2. ALL STEEL SHALL BE ASTM A36.

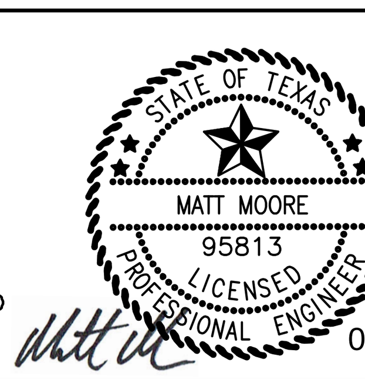


TYPICAL FLUME CROSS SECTION



5' (NO CURB) FLUME DETAIL

CERTIFICATION:
THIS CITY OF GRAND PRAIRIE STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM THE CITY OF GRAND PRAIRIE.



03/28/2016

C-17

STORM DRAIN CHANNEL
AND FLUME
STANDARD DETAILS

GRAND PRAIRIE TEXAS
ENGINEERING

DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
G.F.	J.P.	R.A.K.	NOV. 2015	N.T.S.		

HYDROLOGIC COMPUTATIONS

	AREA	C	CA	TIME	I2	Q2	I10	Q10	I100	Q100	PICK-UP POINT
A-1	0.43	0.80	0.34	10.0	5.42	1.9	8.01	2.8	11.57	4.0	5' CURB INLET "A"
OSA-2	0.04	0.80	0.04	10.0	5.42	0.2	8.01	0.3	11.57	0.4	5' CURB INLET "A"
B-1	0.52	0.80	0.42	10.0	5.42	2.3	8.01	3.4	11.57	4.8	5' CURB INLET "B-2"
OSB-2	0.24	0.80	0.19	10.0	5.42	1.1	8.01	1.6	11.57	2.3	5' CURB INLET "B-2"
OSB-3	0.97	0.80	0.77	10.0	5.42	4.2	8.01	6.3	11.57	9.0	3'x 3' TYPE Y INLET "B-3"
C-1	0.45	0.80	0.36	10.0	5.42	2.0	8.01	2.9	11.57	4.2	GRATE INLET "C"
OSC-2	0.19	0.80	0.15	10.0	5.42	0.8	8.01	1.2	11.57	1.8	GRATE INLET "C"
D-1	0.17	0.80	0.14	10.0	5.42	0.8	8.01	1.1	11.57	1.6	GRATE INLET "C"
D-2	0.20	0.80	0.16	10.0	5.42	0.9	8.01	1.3	11.57	1.9	SHEET FLOW TO EX. DROP INLET
E-1	0.07	0.80	0.06	10.0	5.42	0.3	8.01	0.5	11.57	0.7	SHEET FLOW TO EX. POND
F-1	0.02	0.80	0.02	10.0	5.42	0.1	8.01	0.1	11.57	0.2	SHEET FLOW TO S.H. 360 SERVICE ROAD
F-2	0.01	0.80	0.01	10.0	5.42	0.1	8.01	0.1	11.57	0.1	SHEET FLOW TO S.H. 360 SERVICE ROAD
OSF-3	0.01	0.80	0.01	10.0	5.42	0.1	8.01	0.1	11.57	0.1	SHEET FLOW TO S.H. 360 SERVICE ROAD

N
W E
S

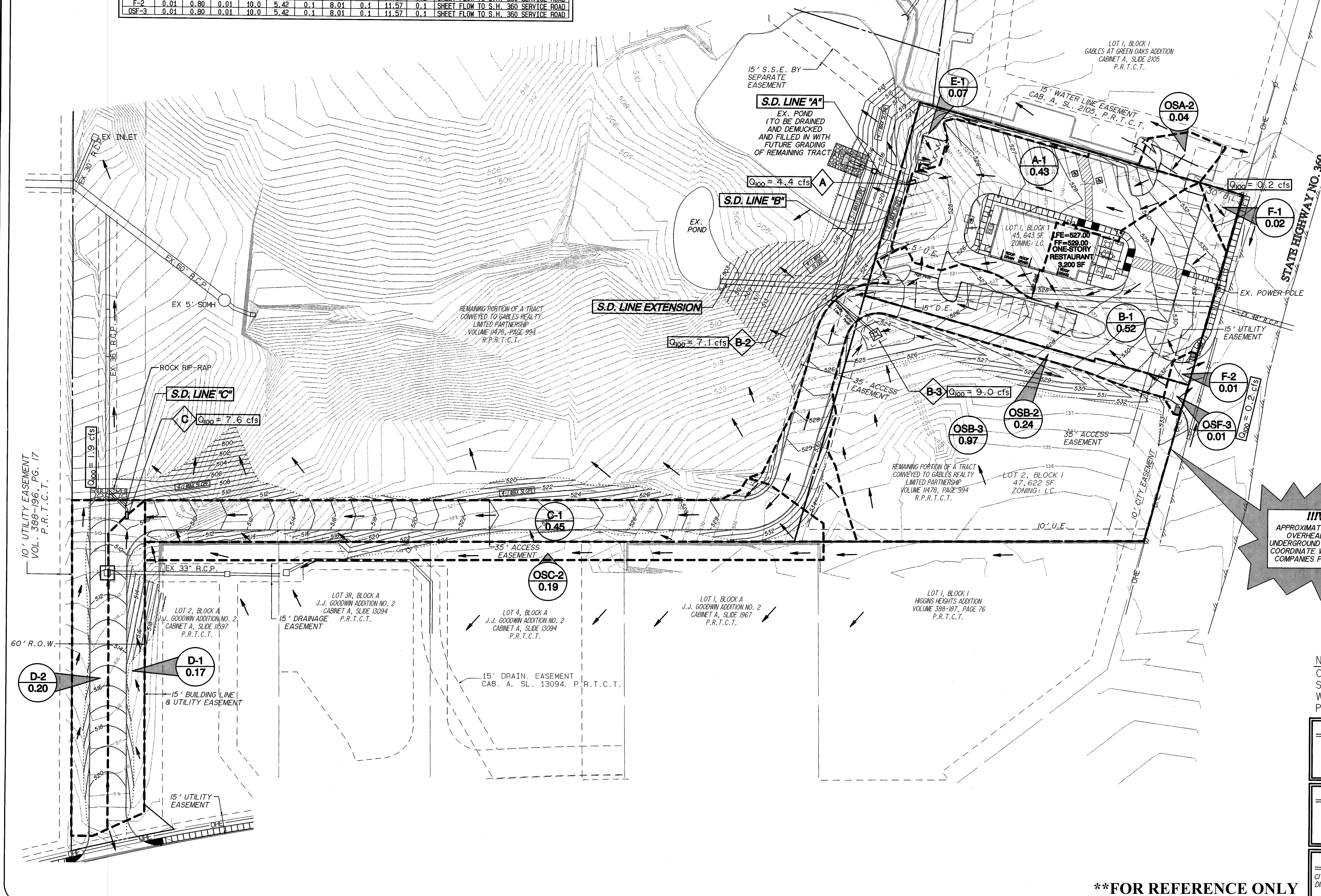
GRAPHIC SCALE 1"=40'
0 40 80 120

LEGEND

C / 5.4 — DRAINAGE AREA /ACREAGE

DRAINAGE AREA DIVIDE

FLOW ARROW (RUNOFF DIRECTION)



LOT 1, BLOCK 1 GABLES AT GREEN OAKS ADDITION CABINET A, SLIDE 2105 P.R.T.C.T.
15' S.S.E. BY SEPARATE EASEMENT
S.D. LINE "A"
EX. POND (TO BE DRAINED AND DEMUCKED AND FILLED IN WITH FUTURE GRADING OF REMAINING TRACT)
Q100 = 4.4 cfs A
S.D. LINE "B"
EX. POND
S.D. LINE EXTENSION
Q100 = 7.1 cfs B-2
B-3 Q100 = 9.0 cfs
S.D. LINE "C"
C Q100 = 7.6 cfs
Q100 = 1.9 cfs
Q100 = 0.2 cfs
EX INLET
EX 30" R.C.P.
EX. 60" R.C.P.
EX 5' SDMH
EX 36" R.C.P.
ROCK RIP-RAP
EX 33" R.C.P.
E-1 0.07
OSA-2 0.04
A-1 0.43
F-1 0.02
B-1 0.52
F-2 0.01
OSF-3 0.01
OSB-2 0.24
OSB-3 0.97
C-1 0.45
OSC-2 0.19
D-1 0.17
D-2 0.20
15' WATER LINE EASEMENT CAB. A, SL. 2105, P.R.T.C.T.
LOT 1, BLOCK 1 45,643 SF ZONING: LC
LFE=527.00 FF=529.00 ONE-STORY RESTAURANT 3,200 SF
STATE HIGHWAY NO. 360
EX. POWER POLE
15' UTILITY EASEMENT
15' D.E.
35' ACCESS EASEMENT
REMAINING PORTION OF A TRACT CONVEYED TO GABLES REALTY LIMITED PARTNERSHIP VOLUME 11478, PAGE 994 R.P.R.T.C.T.
LOT 2, BLOCK 1 47,622 SF ZONING: LC
10' CITY EASEMENT
10' U.E.
!!!WARNING!!! APPROXIMATE LOCATION OF EXISTING OVERHEAD ELECTRIC LINE AND UNDERGROUND GAS CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.
10' UTILITY EASEMENT VOL. 388-196, PG. 17 P.R.T.C.T.
LOT 2, BLOCK A J.J. GOODWIN ADDITION NO. 2 CABINET A, SLIDE 13597 P.R.T.C.T.
15' DRAINAGE EASEMENT
LOT 3R, BLOCK A J.J. GOODWIN ADDITION NO. 2 CABINET A, SLIDE 13094 P.R.T.C.T.
LOT 4, BLOCK A J.J. GOODWIN ADDITION NO. 2 CABINET A, SLIDE 13094 P.R.T.C.T.
LOT 1, BLOCK A J.J. GOODWIN ADDITION NO. 2 CABINET A, SLIDE 1967 P.R.T.C.T.
LOT 1, BLOCK 1 HIGGINS HEIGHTS ADDITION VOLUME 388-187, PAGE 76 P.R.T.C.T.
60' R.O.W.
15' BUILDING LINE & UTILITY EASEMENT
15' DRAIN. EASEMENT CAB. A. SL. 13094. P.R.T.C.T.
15' UTILITY EASEMENT
OHE

Note:
CITY OF GRAND PRAIRIE CONSTRUCTION STANDARDS AND SPECIFICATIONS APPLY WHETHER INSTRUCTED ON THESE PLANS OR NOT.

CITY OF GRAND PRAIRIE GPS MONUMENT #6

ALUMINUM CAP MONUMENT STAMPED G.P.S. 6 AT THE NORTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND AVENUE K INTERSECTION
N = 6967503.49, E = 2410580.75 (GRID)
ELEVATION: 547.78'

CITY OF GRAND PRAIRIE GPS MONUMENT #47

ALUMINUM CAP MONUMENT STAMPED G.P.S. 47 AT THE SOUTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND REGENCY DRIVE INTERSECTION
N = 6975259.96, E = 2412239.43 (GRID)
ELEVATION: 525.85'

BENCHMARK ELEVATION: 543.31'

CITY OF ARLINGTON CONTROL MONUMENT No. AR01 - ALUMINUM DISC LOCATED IN ABUTMENT AT THE NORTHWEST CORNER OF THE GREEN OAKS BRIDGE OVER HIGHWAY No. 360

**FOR REFERENCE ONLY

NO.	REVISION	DATE
1	REVISED PER CITY COMMENTS	1/18/2016
2	REVISED PER CITY COMMENTS	2/17/2016
3		
4		
5		
6		
7		
8		
9		
10		

DEVELOPER
CONIFER REAL ESTATE, INC.
260 MIRON DRIVE SUITE 108
SOUTHLAKE, TX 76092
CONTACT: MARTIN SCHELLING
(817) 552-7786

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS - PLANNERS - SURVEYORS
2405 Mustang Drive Grapevine, TX 76051
Metro (817) 329-4373
TBPE REGISTRATION #F-2944
TBPLS # 10021700

DAIRY QUEEN
GABLES AT GREEN OAKS
CITY OF GRAND PRAIRIE
TARRANT COUNTY, TEXAS

STATE OF TEXAS
JOHN W. ANDERSEN II
91672
LICENSED PROFESSIONAL ENGINEER
11/18/15

JOB NO. :	10656
DATE :	NOVEMBER 2015
DSGN/DRFT :	JWA/TCF
REVIEW :	EWE
SHEET	C4.1

DRAINAGE AREA MAP

E:\10656 - Gables at Green Oaks\Plans\Dairy Queen-Grand Prairie.pro Thu Feb 18 12:07:46 2016

Project : S.D. LINE "A" - DAIRY QUEEN
Location: GRAND PRAIRIE, TEXAS
Date : 11/17/2015 8:36
Pipe "n": 0.013

D/S HGL : 515.00

HYDROLOGIC COMPUTATIONS - S.D. LINE "A"

Design Point ID	Upstream Location (Design Point)	Downstream Location	Distance	Drainage Area						Rainfall Intensity					Design Flow			Design Conduit					Friction Loss		Hydraulic Grade Line			Velocity		Minor Loss					Ground/HGL Elevation			
				Drainage Area Identifier	Drainage Area	Total Drainage Area "A"	Runoff Coeff. "C"	Incremental "CA"	Total "CA"	Design Flood	Inlet Time	Travel Time In Conduit	Time of Concentration	Rainfall Intensity "I"	Total Discharge "Q"	Pipe Discharge	Total Street Flow	No. of Conduits	Span (Box Culvert)	Pipe Diameter (Culvert Rise)	Slope of Conduit	Flow Depth in Conduit	Friction Slope "Sf"	Friction Loss	Upstream HGL Elevation	Downstream HGL Elevation	Design Point HGL Elevation	Upstream Velocity (V1)	Downstream Velocity (V2)	Upstream Velocity Head V1	Downstream Velocity Head V2	Minor Loss Coeff. K	kV1 2/2g	Total Minor Loss	Upstream Ground Elevation (T/C)	Elevation Diff. Ground-HGL	Upstream Pipe Flowline	Downstream Pipe Flowline
	sta.	sta.	ft.	No.	acres	acres				yrs	min.	min.	min.	in./hr.	cfs	cfs	cfs		ft.	(in.) ft.	ft./ft.	FT.	ft/ft	ft.	ft.	ft.	ft.	ft/sec	ft/sec	ft	ft		ft	ft	ft.	ft.	ft.	ft.
1	2	3	4		5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
5' CURB INLET "A"	146.67	145.59	3.08	A-1, OSA-2	0.47	0.47	0.80	0.38	0.38	100	10	0.00	10.00	11.57	4.40	4.40		1		18	0.1288	1.50	0.0018	0.01	515.88	515.87	516.00		2.49							524.50	8.50	518.50	518.10
18" 45° BEND	145.59	115.60	27.99		0.00	0.47	0.00	0.00	0.38	100	10	0.02	10.00	11.57	4.40	4.40		1		18	0.1288	1.50	0.0018	0.05	515.84	515.79	515.87	2.49	2.49	0.10	0.10	0.35	0.03	0.03	523.82	7.95	518.10	513.04
STORM DRAIN MANHOLE	115.60	92.88	22.72	B-1, OSB-2, OSB-3	1.73	2.20	0.80	1.38	1.76	100	10	0.19	10.21	11.47	20.37	20.37		1		24	0.0027	2.00	0.0081	0.18	515.18	515.00	515.79	2.49	6.48	0.10	0.65	0.50	0.05	0.60	515.97	0.18	513.04	513.00
24" HEADWALL	92.88																									515.00											

Project : S.D. LINE "B" - DAIRY QUEEN
Location: GRAND PRAIRIE, TEXAS
Date : 11/17/2015 8:36
Pipe "n": 0.013

D/S HGL :

HYDROLOGIC COMPUTATIONS - S.D. LINE "B"

Design Point ID	Upstream Location (Design Point)	Downstream Location	Distance	Drainage Area						Rainfall Intensity					Design Flow			Design Conduit					Friction Loss		Hydraulic Grade Line			Velocity		Minor Loss					Ground/HGL Elevation			
				Drainage Area Identifier	Drainage Area	Total Drainage Area "A"	Runoff Coeff. "C"	Incremental "CA"	Total "CA"	Design Flood	Inlet Time	Travel Time In Conduit	Time of Concentration	Rainfall Intensity "I"	Total Discharge "Q"	Pipe Discharge	Total Street Flow	No. of Conduits	Span (Box Culvert)	Pipe Diameter (Culvert Rise)	Slope of Conduit	Flow Depth in Conduit	Friction Slope "Sf"	Friction Loss	Upstream HGL Elevation	Downstream HGL Elevation	Design Point HGL Elevation	Upstream Velocity (V1)	Downstream Velocity (V2)	Upstream Velocity Head V1	Downstream Velocity Head V2	Minor Loss Coeff. K	kV1 2/2g	Total Minor Loss	Upstream Ground Elevation (T/C)	Elevation Diff. Ground-HGL	Upstream Pipe Flowline	Downstream Pipe Flowline
	sta.	sta.	ft.	No.	acres	acres				yrs	min.	min.	min.	in./hr.	cfs	cfs	cfs		ft.	(in.) ft.	ft./ft.	FT.	ft/ft	ft.	ft.	ft.	ft.	ft/sec	ft/sec	ft	ft		ft	ft	ft.	ft.	ft.	ft.
1	2	3	4		5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
STORM DRAIN LINE "B"																																							
3' x 3' DROP INLET "B-2"	156.05	112.12	43.93	OSB-3	0.97	0.97	0.80	0.77	0.77	100	10	0.00	10.00	11.57	9.04	9.04		1		21	0.0036	1.75	0.0033	0.14	516.63	516.49	516.91		3.76							523.50	6.59	519.50	519.35
10' CURB INLET "B-1"	112.12	0.00	112.12	B-1 & OSB-2	0.76	1.73	0.80	0.61	1.38	100	10	0.19	10.19	11.48	16.01	16.01		1		24	0.0878	2.00	0.0050	0.56	516.20	515.64	516.49	3.76	5.10	0.22	0.40	0.50	0.11	0.29	524.60	8.11	519.35	513.34
STORM DRAIN MANHOLE	0.00												10.21	11.47	20.37	20.37		1		24	0.0027	2.00	0.0081	0.00	515.18	515.00	515.64	5.10	6.48	0.40	0.64	0.50	0.20	0.45	517.49	1.85	513.34	

INLET DESIGN CALCULATIONS

INLET #	INLET TYPE	Street Grade	FLOW Q10	FLOW Q100	DESIGN DEPTH OF FLOW	DEPTH OF DEPRESSION	DEPTH OF FLOW AT OPENING	CAPACITY OF INLET PER FT. OF LENGTH	LENGTH OF INLET OPENING	CAPACITY OF INLET	CARRY-OVER FLOW PASSING	% CAPTUERED BY INLET	CARRY-OVER FLOW PASSING	% CAPTUERED BY INLET	Pick Up Point
			(cfs)	(cfs)	y0 (ft)	a (ft)	Y (ft)	Q/L or Q/P (cfs/ft)	L or P (ft)	Q (cfs)	q10 (cfs)	q10 (cfs)	q100 (cfs)	q100 (cfs)	
A	CURB INLET	N/A	3.0	4.4	0.15	0.42	0.57	1.28	5	6.4	0.00	100.00	0.00	100.00	
B-2	CURB INLET	N/A	4.9	7.1	0.25	0.42	0.67	1.63	5	8.2	0.00	100.00	0.00	100.00	
B-3	3'x3' TYPE Y	N/A	6.3	9.0	0.10	0.50	0.60	1.39	12	16.7	0.00	100.00	0.00	100.00	
C	GRATE INLET	N/A	5.3	7.6	0.20	0.00	0.20	N/A	N/A	7.69	0.00	100.00	0.00	100.00	

HYDROLOGIC COMPUTATIONS

	AREA	C	CA	TIME	I2	Q2	I10	Q10	I100	Q100	PICK-UP POINT
A-1	0.43	0.80	0.34	10.0	5.42	1.9	8.01	2.8	11.57	4.0	5' CURB INLET "A"
OSA-2	0.04	0.80	0.04	10.0	5.42	0.2	8.01	0.3	11.57	0.4	5' CURB INLET "A"
B-1	0.52	0.80	0.42	10.0	5.42	2.3	8.01	3.4	11.57	4.8	5' CURB INLET "B-2"
OSB-2	0.24	0.80	0.19	10.0	5.42	1.1	8.01	1.6	11.57	2.3	5' CURB INLET "B-2"
OSB-3	0.97	0.80	0.77	10.0	5.42	4.2	8.01	6.3	11.57	9.0	3'x 3' TYPE Y INLET "B-3"
C-1	0.45	0.80	0.36	10.0	5.42	2.0	8.01	2.9	11.57	4.2	GRATE INLET "C"
OSC-2	0.19	0.80	0.15	10.0	5.42	0.8	8.01	1.2	11.57	1.8	GRATE INLET "C"
D-1	0.17	0.80	0.14	10.0	5.42	0.8	8.01	1.1	11.57	1.6	GRATE INLET "C"
D-2	0.20	0.80	0.16	10.0	5.42	0.9	8.01	1.3	11.57	1.9	SHEET FLOW TO EX. DROP INLET
E-1	0.07	0.80	0.06	10.0	5.42	0.3	8.01	0.5	11.57	0.7	SHEET FLOW TO EX. POND
F-1	0.02	0.80	0.02	10.0	5.42	0.1	8.01	0.1	11.57	0.2	SHEET FLOW TO S.H. 360 SERVICE ROAD
F-2	0.01	0.80	0.01	10.0	5.42	0.1	8.01	0.1	11.57	0.1	SHEET FLOW TO S.H. 360 SERVICE ROAD
OSF-3	0.01	0.80	0.01	10.0	5.42	0.1	8.01	0.1	11.57	0.1	SHEET FLOW TO S.H. 360 SERVICE ROAD

DRAINAGE SYSTEM GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE CITY OF GRAND PRAIRIE STANDARDS AND SPECIFICATIONS.
2. ALL STORM SEWER PIPE SHALL BE CLASS III RCP, ASTM C76, UNLESS OTHERWISE NOTED.
3. ALL DITCHES SHALL BE TAMPED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY. (ALL TAMPING SHALL BE DONE MECHANICALLY).
4. SEE WATER PLANS, SANITARY SEWER PLANS, AND PAVING PLAN & PROFILE FOR ADDITIONAL INFORMATION RELATED TO PAVING, DRAINAGE, AND OTHER UTILITY CONSTRUCTION.
5. SEE CITY OF GRAND PRAIRIE STANDARD SPECIFICATIONS FOR CONSTRUCTION STANDARDS.
6. THE LOCATIONS OF EXISTING UTILITIES INDICATED IN THESE PLANS ARE TAKEN FROM EXISTING PUBLIC RECORDS. THE EXACT LOCATION AND ELEVATION OF ALL PUBLIC UTILITIES SHALL BE DETERMINED BY THE CONTRACTOR AND THE CONTRACTOR SHALL DETERMINE WHETHER ANY ADDITIONAL FACILITIES OTHER THAN THOSE IN THESE PLANS MAY BE PRESENT.
7. ALL CONCRETE USED IN THE CONSTRUCTION OF STORM SEWER MANHOLES, INLETS, BOX CULVERTS, ETC. SHALL BE CLASS 'A' CONCRETE AND MINIMUM STRENGTH OF 3,000 PSI (5 SACK CEMENT) AT 28 DAYS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TESTING OF THE CONCRETE.
8. CONTRACTOR SHALL COORDINATE WITH THE OWNER, ENGINEER, OR HIS REPRESENTATIVE AND CITY REPRESENTATIVES REGARDING DEVIATION FROM THESE PLANS.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY OF GRAND PRAIRIE STANDARDS, TEXAS STATE LAW, AND O.S.H.A. STANDARDS.
10. ALL BACKFILL FOR STORM SEWER FACILITIES SHALL CONFORM TO THE SPECIFICATIONS AND DETAILS SHOWN IN THIS PLAN SET. NO WATER JETTING IS ALLOWED.
11. GROUND ELEVATIONS SHOULD BE AT OR NEAR PROPOSED SUBGRADE ELEVATIONS WITHIN RIGHT-OF-WAY. CONTRACTOR SHALL RETURN SUBGRADE TO WITHIN ONE-TENTH (0.1') FEET OF ESTABLISHED GRADE AFTER THE INSTALLATION OF ALL DRAINAGE FACILITIES.
12. OMNIFLEX-TYPE JOINT SEALER OR AN APPROVD EQUIVALENT FOR ALL STORM SEWER PIPES.
13. ALL WYES AND BENDS SHALL BE PREFABRICATED BY THE PIPE SUPPLIER.

RUNOFF COMPUTATION:

RUNOFF COMPUTATION:
BASIS: RATIONAL METHOD Q = C x I x A
Q = STORM DRAINAGE DISCHARGE (cfs) AT DESIGN POINT
C = RUNOFF COEFFICIENT
I = DESIGN STORM INTENSITY (inches per hour)
A = DRAINAGE AREA (acres)
RUNOFF COEFFICIENT: 0.30 - PARKS AND OPEN AREAS
0.50 - SINGLE FAMILY RESIDENTIAL
0.75 - MULTI-FAMILY RESIDENTIAL
0.85 - INDUSTRIAL
0.80 - BUSINESS
0.90 - CENTRAL BUSINESS DISTRICT
INTENSITY: RAINFALL INTENSITY-DURATION-FREQUENCY CURVES FOR AREA DEVELOPED FROM TECHNICAL PAPER-40
STORM FREQENCY: 10 YEAR-ENCLOSED PIPE SYSTEM
10 YEAR - ON-GRADE INLETS
100 YEAR - SUMP INLETS
TIME OF CONCENTRATION: COMBINATION OF INLET TIME+TIME OF FLOW IN THE DRAIN
INLET TIME: BEING THE TIME FOR WATER TO FLOW OVER THE SURFACE OF THE GROUND TO THE STORM DRAIN INLET (ONSITE+OFFSITE, IF APPLICABLE)
MINIMUM INLET TIME:
PARKS/OPEN SPACE - 20 MIN.
RESIDENTIAL - 15 MIN.
INDUSTRIAL/BUSINESS - 10 MIN.
CBD - 5 MIN.

DRAINAGE DESIGN CRITERIA

STORM DRAIN SYSTEM DESIGN CRITERIA & CALCULATIONS

HYDRAULIC SECTIONS
BASIC: MANNING'S FORMULA WITH
N = 0.025 EARTH CHANNELS AND DITCHES
N = 0.045 GRASS CHANNELS AND DITCHES
N = 0.016 CONCRETE PAVEMENT
N = 0.013 CONCRETE CONDUITS & CULVERTS
N = 0.022 CORRUGATED PIPE

INLET CAPACITY:

CURB INLET IN SUMP - WEIR EQUATION
(25% CLOGGING ASSUMED)
$Q = C\ L\ d^{1.5}$
C = WEIR COEFFICIENT ADJUSTED FOR 25% CLOGGING = 2.25
L = LENGTH OF WEIR CREST
d = HEAD ABOVE WEIR CREST
$Q/L = 2.25\ d^{1.5}$

NOTE:
1. FACTORY FABRICATED 45° OR 60° WYES SHALL BE INSTALLED AT ALL PROPOSED PIPE TO PROPOSED PIPE CONNECTIONS.
2. ALL CONNECTIONS TO EXISTING CONCRETE PIPE SHALL BE MADE WITH CONCRETE PIPE.
3. CONCRETE COLLARS SHALL BE CONSTRUCTED AT ALL PROPOSED PIPE TO EXISTING CONCRETE PIPE CONNETIONS, AT ALL CONCRETE PIPE SIZE CHANGES, AT ALL CONCRETE PIPE PVI'S AND AT ALL CONCRETE PIPE JOINTS WITH MORE THAN HALF PIPE TONGUE EXPOSURE.

SLUG FLOW CALCULATIONS:

SLUG FLOW COMPUTATION:
BASIS: Where $0.10 < S < 0.20$, then $D = 9 \times Q^{0.4}$
Where $0.20 < S < 1.00$, then $D = 6.6 \times (Q^2 / S)^{0.2}$
Q = STORM DRAINAGE DISCHARGE (cfs)
S = SLOPE OF PIPE (ft/ft)
D = MINIMUM PIPE DIAMETER (inches)

SLUG FLOW COMPUTATIONS

LINE	S =	Q =	D =	D =
A	0.2238	4.4	$6.6 \times (2.0^2 / .2494)^{0.2}$	16.10 *

* S.D. LINE "A" HAS BEEN DESIGNED AS A 21" R.C.P. AS IT IS PARTIAL FLOW UNDER Q_{100} AND SLUG FLOW MAY NOT OCCUR.

**FOR REFERENCE ONLY

Note:
CITY OF GRAND PRAIRIE CONSTRUCTION STANDARDS AND SPECIFICATIONS APPLY WHETHER INSTRUCTED ON THESE PLANS OR NOT.

NO.	REVISION	DATE
1	REVISED PER CITY COMMENTS	1/15/2016
2	REVISED PER CITY COMMENTS	1/21/2016
3	REVISED PER CITY COMMENTS	2/17/2016
4		
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CONIFER REAL ESTATE, INC.
280 MIRON DRIVE SUITE 108
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GOODWIN MARSHALL INC
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2405 Mustang Drive, Grapevine, TX. 76051
Metro (817) 329-4373
TBPE REGISTRATION #F-2944
TBPLS # 10021700

DAIRY QUEEN
GABLES AT GREEN OAKS
CITY OF GRAND PRAIRIE
TARRANT COUNTY, TEXAS

CITY OF GRAND PRAIRIE GPS MONUMENT #6
ALUMINUM CAP MONUMENT STAMPED G.P.S. 6 AT THE NORTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND AVENUE K INTERSECTION
N = 6967503.49, E = 2410580.75 (GRID)
ELEVATION: 547.78'

CITY OF GRAND PRAIRIE GPS MONUMENT #47
ALUMINUM CAP MONUMENT STAMPED G.P.S. 47 AT THE SOUTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND REGENCY DRIVE INTERSECTION
N = 6975259.96, E = 2412239.43 (GRID)
ELEVATION: 525.85'

BENCHMARK ELEVATION: 543.31'
CITY OF ARLINGTON CONTROL MONUMENT No. AROI - ALUMINUM DISC LOCATED IN ABUTMENT AT THE NORTHWEST CORNER OF THE GREEN OAKS BRIDGE OVER HIGHWAY No. 360

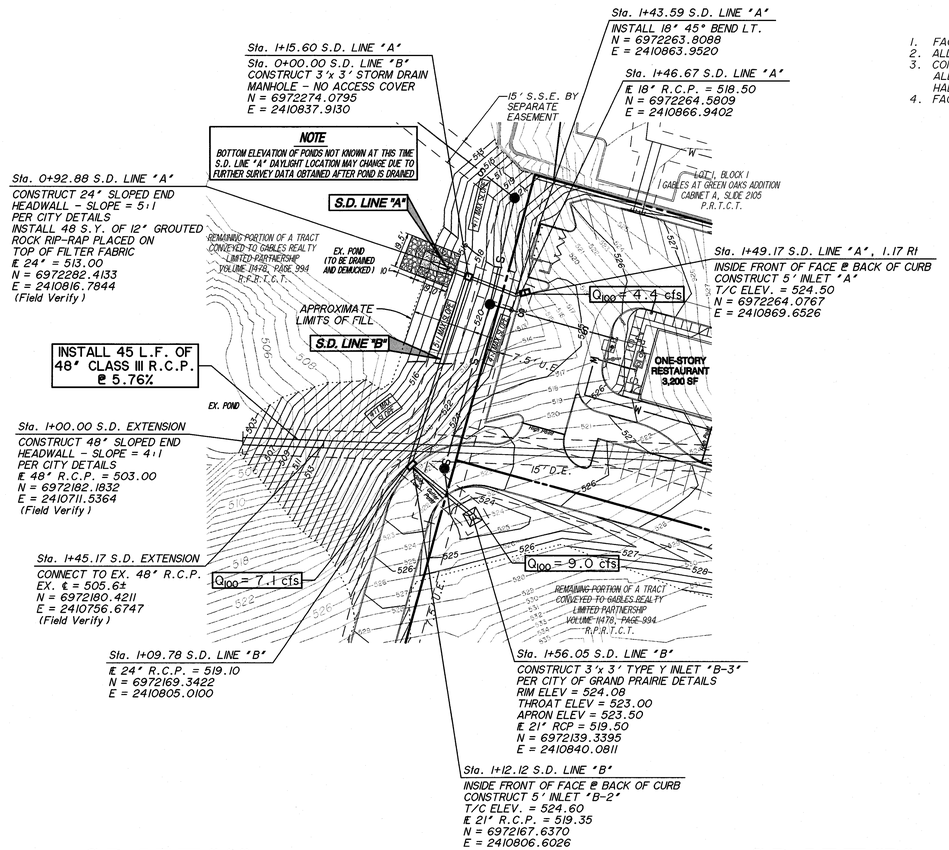
STATE OF TEXAS
JOHN W. ANDERSEN II
91672
PROFESSIONAL ENGINEER

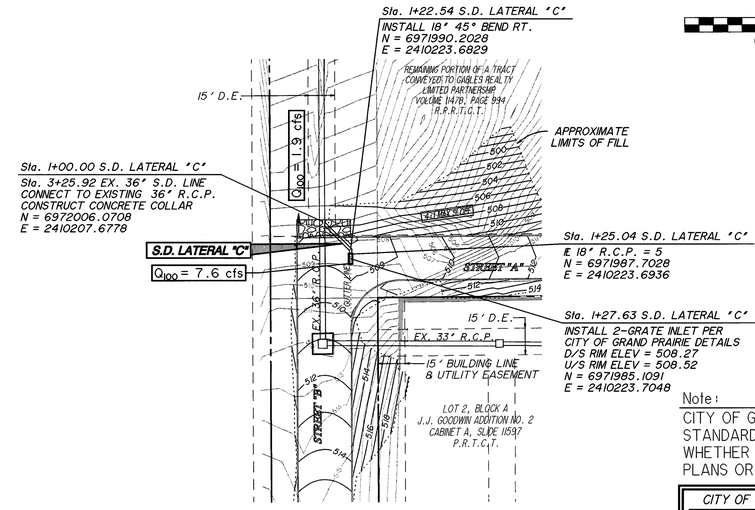
JOB NO. : 10656
DATE : NOVEMBER 2015
DSGN/DRFT : JWA/TCF
REVIEW : EWE
SHEET C4.2
DRAINAGE CRITERIA

E:\10656 - Gables at Green Oaks\Plans\Dairy Queen-Grand Prairie.pro Thu Feb 18 12:08:32 2016

STANDARD CITY OF GRAND PRAIRIE DRAINAGE NOTES

1. FACTORY FABRICATED 45° OR 60° WYES SHALL BE INSTALLED AT ALL PROPOSED PIPE TO PROPOSED PIPE CONNECTIONS.
2. ALL CONNECTIONS TO EXISTING CONCRETE PIPE SHALL BE MADE WITH CONCRETE PIPE.
3. CONCRETE COLLARS SHALL BE CONSTRUCTED AT ALL PROPOSED PIPE TO EXISTING CONCRETE PIPE CONNECTIONS, AT ALL CONCRETE PIPE SIZE CHANGES, AT ALL CONCRETE PIPE PVI'S AND AT ALL CONCRETE PIPE JOINTS WITH MORE THAN HALF PIPE TONGUE EXPOSURE.
4. FACTORY FABRICATED 15°, 30°, 45°, OR 60° BENDS SHALL BE REQUIRED FOR ALL PROPOSED PIPE BENDS.





**FOR REFERENCE ONLY

N
W E
S

GRAPHIC SCALE 1"=40'
0 40 80 120

NO.	REVISION	DATE
1	REVISED PER CITY COMMENTS	1/18/2016
2	REVISED PER CITY COMMENTS	1/21/2016
3	REVISED PER CITY COMMENTS	2/17/2016
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Note:
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CITY OF GRAND PRAIRIE GPS MONUMENT #6
ALUMINUM CAP MONUMENT STAMPED G.P.S. 6 AT THE NORTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND AVENUE K INTERSECTION
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BENCHMARK ELEVATION: 543.31'
CITY OF ARLINGTON CONTROL MONUMENT No. AROI - ALUMINUM DISC LOCATED IN ABUTMENT AT THE NORTHWEST CORNER OF THE GREEN OAKS BRIDGE OVER HIGHWAY No. 360

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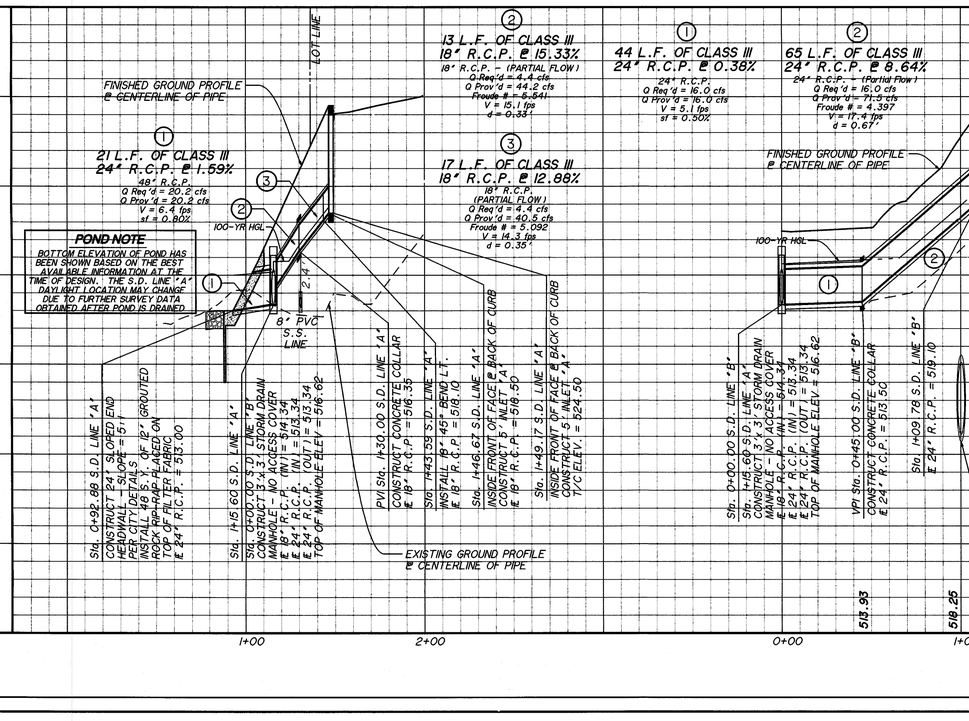
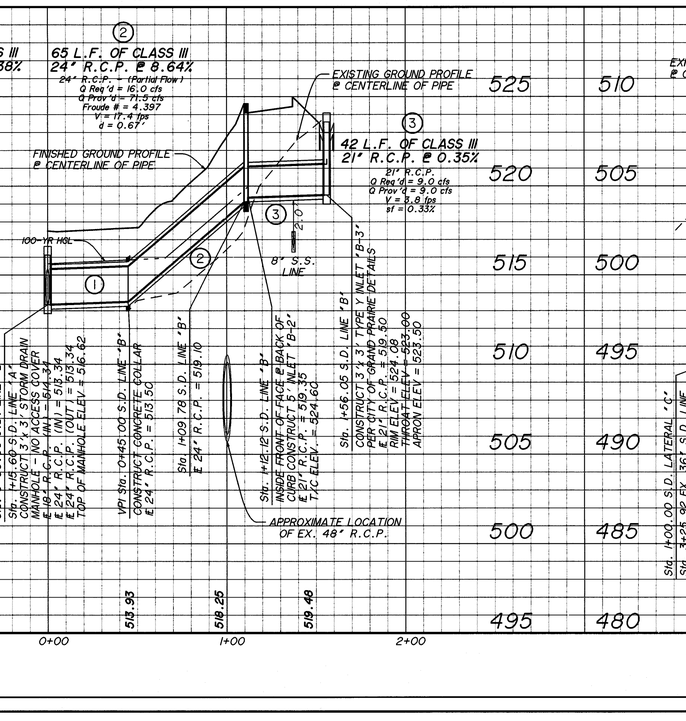
Metro (817) 329-4373
TBPE REGISTRATION #F-2944
TBPLS # 10021700

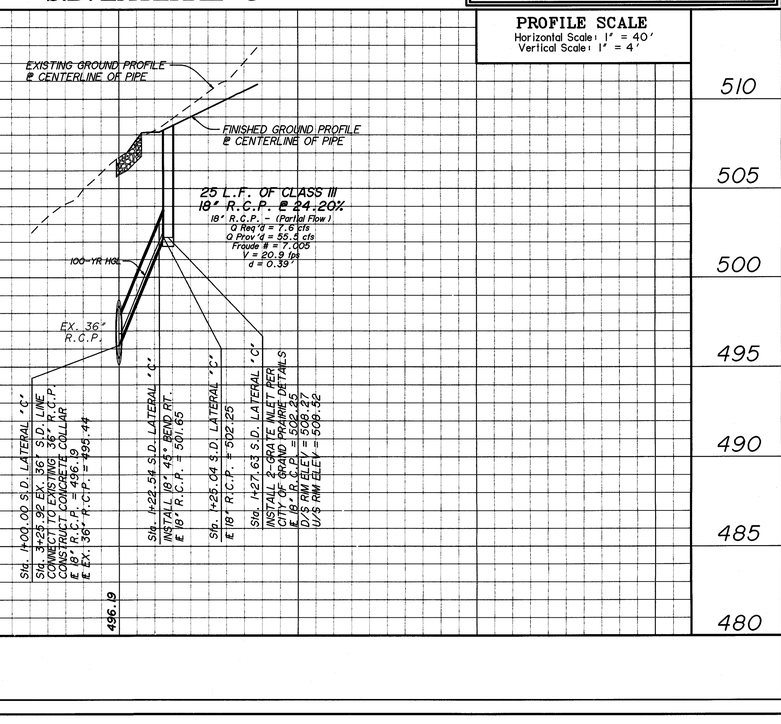
S.D. LINE "A"



S.D. LINE "B"



S.D. LATERAL "C"



PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

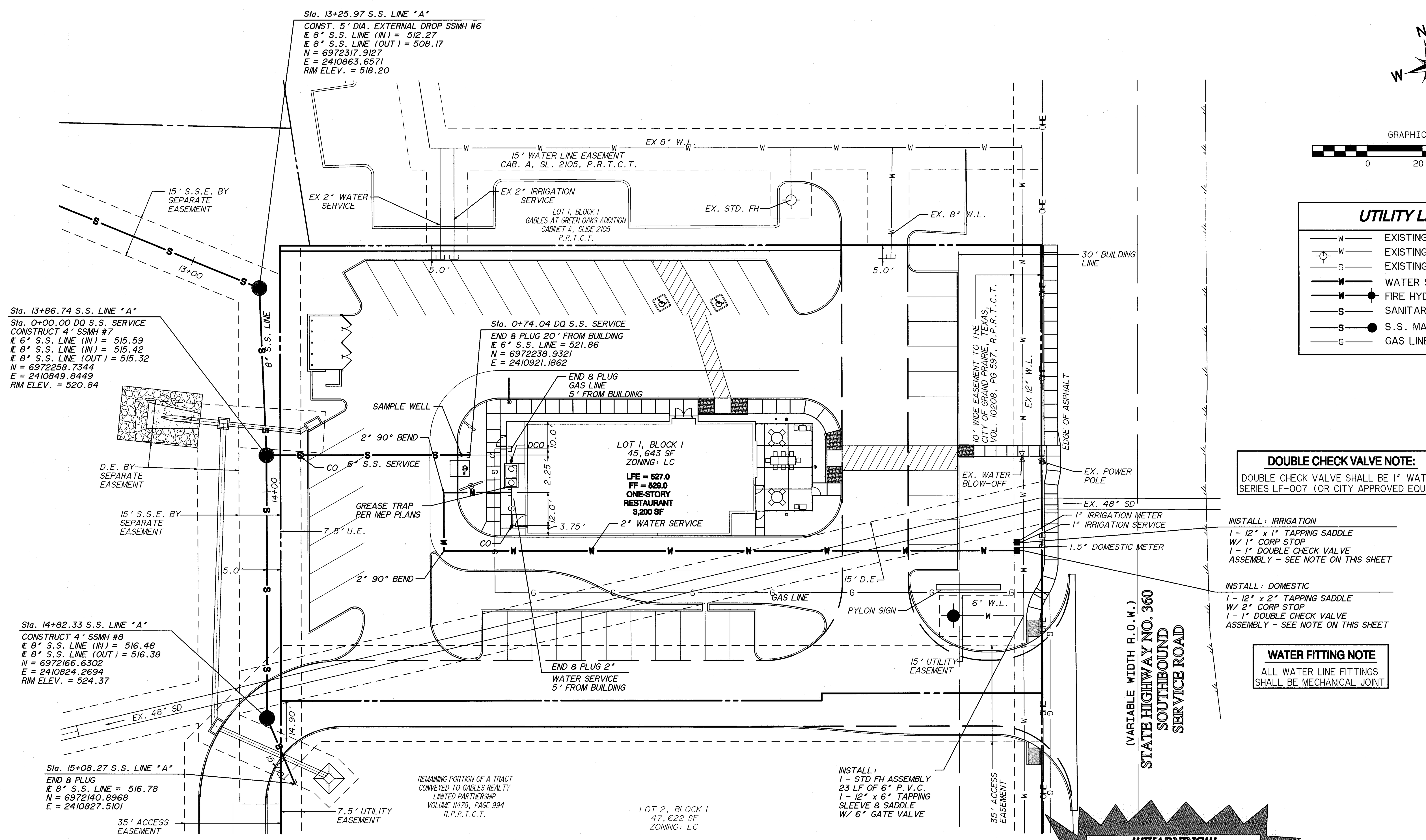
DAIRY QUEEN
GABLES AT GREEN OAKS
CITY OF GRAND PRAIRIE
TARRANT COUNTY, TEXAS

STATE OF TEXAS
JOHN W. ANDERSEN II
91672
LICENSED PROFESSIONAL ENGINEER
11/15

JOB NO. :	10656
DATE :	NOVEMBER 2015
DSGN/DRFT :	JWA/TCF
REVIEW :	EWE
SHEET	C4.3

S.D. LINES 'A' & 'B' & S.D. LATERAL 'C'

E:\10656 - Gables at Green Oaks\Plans\Dairy Queen-Grand Prairie.pro Thu Feb 18 12:08:40 2016



UTILITY LEGEND

—W—	EXISTING WATER LINE
	EXISTING FIRE HYDRANT
—S—	EXISTING SANITARY SEWER LINE
—W—	WATER SERVICE
	FIRE HYDRANT
—S—	SANITARY SEWER
—S—●	S.S. MANHOLE
—G—	GAS LINE

DOUBLE CHECK VALVE NOTE:
DOUBLE CHECK VALVE SHALL BE 1" WATTS SERIES LF-007 (OR CITY APPROVED EQUAL)

WATER FITTING NOTE
ALL WATER LINE FITTINGS SHALL BE MECHANICAL JOINT

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING OVERHEAD ELECTRIC LINE AND UNDERGROUND GAS CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

S.S. SERVICE NOTE:
REFER TO MEP PLANS FOR HORIZONTAL & VERTICAL ALIGNMENTS OF DOMESTIC SEVICE LINE, GREASE SERVICE LINE, GREASE TRAP, ETC.

Note:
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CITY OF GRAND PRAIRIE GPS MONUMENT #6
ALUMINUM CAP MONUMENT STAMPED G.P.S. 6 AT THE NORTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND AVENUE K INTERSECTION
N = 6967503.49, E = 2410580.75 (GRID)
ELEVATION: 547.78'

CITY OF GRAND PRAIRIE GPS MONUMENT #47
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N = 6975259.96, E = 2412239.43 (GRID)
ELEVATION: 525.85'

BENCHMARK ELEVATION: 543.31'
CITY OF ARLINGTON CONTROL MONUMENT No. AR01 - ALUMINUM DISC LOCATED IN ABUTMENT AT THE NORTHWEST CORNER OF THE GREEN OAKS BRIDGE OVER HIGHWAY No. 360

****FOR REFERENCE ONLY**

NO.	REVISION	DATE
1	ADDED DOUBLE CHECK ON IRRIGATION SERVICE	12/14/2015
2	REVISED PER CITY COMMENTS	1/18/2016
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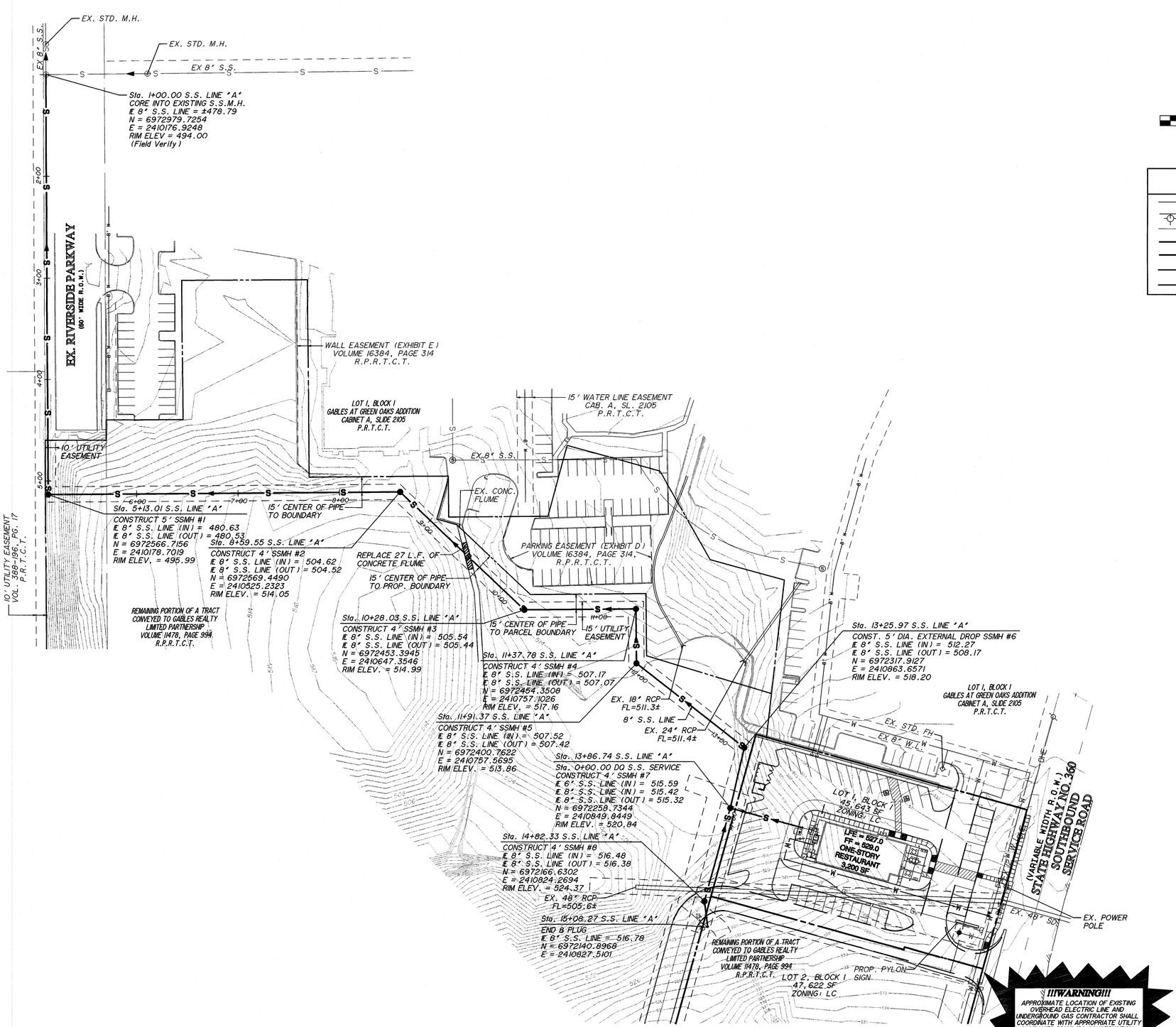
Metro (817) 329-4373
TBPE REGISTRATION #F-2944
TBPLS # 10021700

DAIRY QUEEN
GABLES AT GREEN OAKS
CITY OF GRAND PRAIRIE
TARRANT COUNTY, TEXAS

STATE OF TEXAS
JOHN W. ANDERSEN II
91672
LICENSED PROFESSIONAL ENGINEER

JOB NO.: 10656
DATE: NOVEMBER 2015
DSGN/DRFT: JWA/TCF
REVIEW: EWE
SHEET C5.1
UTILITY PLAN



N

W E

S

GRAPHIC SCALE 1"=50'

0 50 100 150

UTILITY LEGEND

W	EXISTING WATER LINE
W	EXISTING FIRE HYDRANT
S	EXISTING SANITARY SEWER LINE
W	WATER SERVICE
W	FIRE HYDRANT
S	SANITARY SEWER
S	S.S. MANHOLE

NO.	REVISION	DATE
1	REVISED PER CITY COMMENTS	1/19/2016
2	REVISED PER CITY COMMENTS	2/17/2016
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DAIRY QUEEN
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TARRANT COUNTY, TEXAS

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CITY OF GRAND PRAIRIE GPS MONUMENT #6

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CITY OF ARLINGTON CONTROL MONUMENT No. AR01 - ALUMINUM DISC LOCATED IN ABUTMENT AT THE NORTHWEST CORNER OF THE GREEN OAKS BRIDGE OVER HIGHWAY No. 360

STATE OF TEXAS
JOHN W. ANDERSEN II
91672
PROFESSIONAL ENGINEER

JOB NO.	10656
DATE	NOVEMBER 2015
DSGN/DRFT	JWA/TCF
REVIEW	EWE
SHEET	C5.2

OFFSITE UTILITY PLAN

E:\10656 - Gables at Green Oaks\Plans\Dairy Queen-Grand Prairie.pro Thu Feb 18 12:07:32 2016


S.S. LINE "A"
EXISTING GROUND PROFILE @ CENTERLINE OF PIPE
① 342 L.F. OF 8" SDR-26 P.V.C. @ 6.99%
409 L.F. OF 8" SDR-26 P.V.C. @ 0.50%
CLAY CHECK
MATCHLINE STA. 6+00.00
STA. 1+00.00 - S.S. LINE 'A' CONNECT EXISTING SSMH RIM ELE. = 494.00 E 8" P.V.C. (IN) = ±478.49 (FIELD VERIFY)
STA. 5+13.01 - S.S. LINE 'A' CONST. STD. 5' DIA. SSMH #1 RIM ELEVATION = 495.99 E 8" P.V.C. (IN) = 480.63 E 8" P.V.C. (OUT) = 480.53
② 105 L.F. OF 8" SDR-35 P.V.C. @ 1.46%
EXISTING CONCRETE FLUME
342 L.F. OF 8" SDR-26 P.V.C. @ 6.99%
164 L.F. OF 8" SDR-35 P.V.C. @ 0.50%
STA. 8+59.55 - S.S. LINE 'A' CONST. STD. 5' DIA. SSMH #2 RIM ELEVATION = 514.05 E 8" P.V.C. (IN) = 504.62 E 8" P.V.C. (OUT) = 504.52
STA. 10+28.03 - S.S. LINE 'A' CONST. STD. 5' DIA. SSMH #3 RIM ELEVATION = 514.90 E 8" P.V.C. (IN) = 505.54 E 8" P.V.C. (OUT) = 505.44
MATCHLINE STA. 11+00.00 (SEE THIS SHEET)
S.S. LINE "A"
② 105 L.F. OF 8" SDR-35 P.V.C. @ 1.46%
③ 49 L.F. OF 8" SDR-35 P.V.C. @ 0.50%
④ 56 L.F. OF 8" SDR-35 P.V.C. @ 1.85%
⑤ 25 L.F. OF 8" SDR-35 P.V.C. @ 0.50%
FINISHED GROUND PROFILE @ CENTERLINE OF PIPE
EXISTING GROUND PROFILE @ CENTERLINE OF PIPE
130 L.F. OF 8" SDR-35 P.V.C. @ 0.50%
92 L.F. OF 8" SDR-35 P.V.C. @ 3.23%
18" RCP S.D. LINE "A"
21" RCP S.D. LINE "B"
DQ S.S. SERVICE
FINISHED GROUND PROFILE @ CENTERLINE OF PIPE
CLEAN OUT
SAMPLE WELL
72 L.F. OF 6" SDR-35 P.V.C. @ 8.71%
EXISTING GROUND AT CENTER OF PIPE
PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'
CITY OF GRAND PRAIRIE GPS MONUMENT #6
ALUMINUM CAP MONUMENT STAMPED G.P.S. 6 AT THE NORTHEAST CORNER OF THE NORTH BOUND FRONTAGE ROAD OF S.H. 360 AND AVENUE K INTERSECTION N = 6967503.49, E = 2410580.75 (GRID) ELEVATION: 547.78'
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BENCHMARK ELEVATION: 543.31'
CITY OF ARLINGTON CONTROL MONUMENT No. AR01 - ALUMINUM DISC LOCATED IN ABUTMENT AT THE NORTHWEST CORNER OF THE GREEN OAKS BRIDGE OVER HIGHWAY No. 360
DEVELOPER
CONIFER REAL ESTATE, INC.
260 MIRON DRIVE SUITE 108
SOUTHLAKE, TX 76092
CONTACT: MARTIN SCHELLING
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JOHN W. ANDERSEN II
91672
JOB NO.: 10656
DATE: NOVEMBER 2015
DSGN/DRFT: JWA/TCF
REVIEW: EWE
SHEET C5.3
S.S. LINE "A" Sta. 1+00.00-Sta. 15+28.30
DQ S.S. SERVICE Sta. 0+00.00-Sta. 0+79.05
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